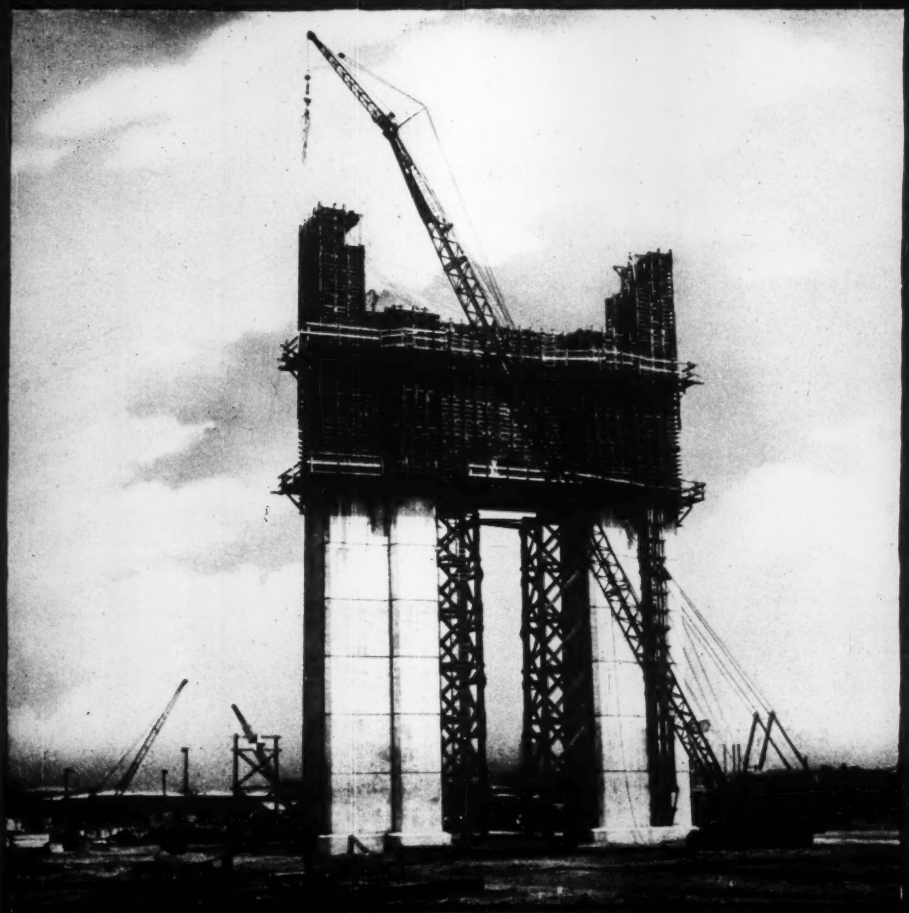
ENGINEERING-RECORD

SEPTEMBER 22, 1945



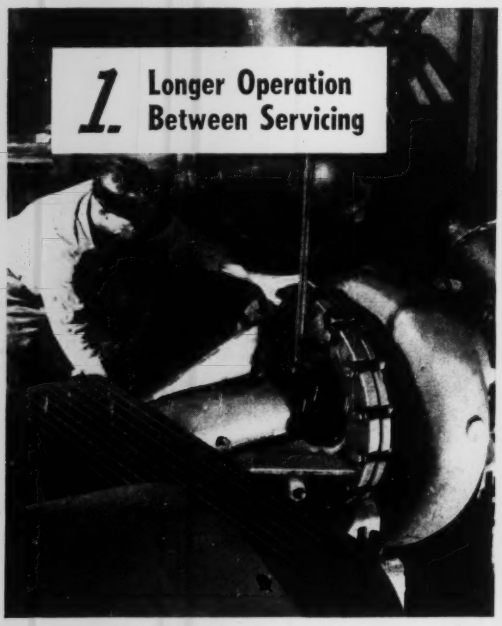
Caisson is seen ahead on bridge pier of Philadelphia-Chester bridge

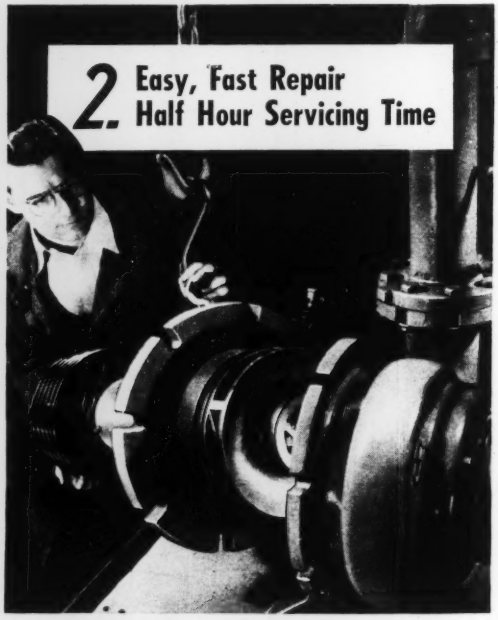
ANALOGUE ELECTRICAL ANALOGY

NETWORK FLOW ANALYSIS

Save 2 Ways

With Allis-Chalmers Solids-Handling Pumps!





THIS IS WHAT TYPICAL METALLIC and non-metallic material processors say about A-C solids-handling pumps.

"Best previous pump had life of ten days. Most rapidly wearing part of A-C pump has life about ten times as long at about same initial cost."

"Previous pump cost $300 per month maintenance. Our A-C solids pump has had no service in nine months."

"Pump life had been about 80 hours with best pump obtainable. A-C solids-handling pump now runs 350 hours."

Here is proof that Allis-Chalmers solids handling pumps *actually deliver the* long service promised for them; proof that they actually do cut pumping costs.

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Dismantling and reassembling takes a half hour or less. Wearing parts are separated and only worn parts need be replaced. Three sets of bearings, brackets and shafts cover all pump sizes, reducing inventory of spare parts as much as 2/3.

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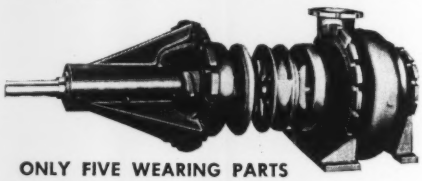
When you buy, a skilled pump application engineer makes sure you have the *right* pump for your needs. Contact your nearest A-C Sales Office or write for Bulletin 6381.

A-2764



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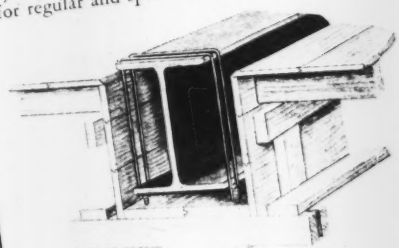

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ENGINEERING NEWS-RECORD

VOLUME 143 SEPTEMBER 22, 1949 NO. 12

WALDO G. BOWMAN
Editor

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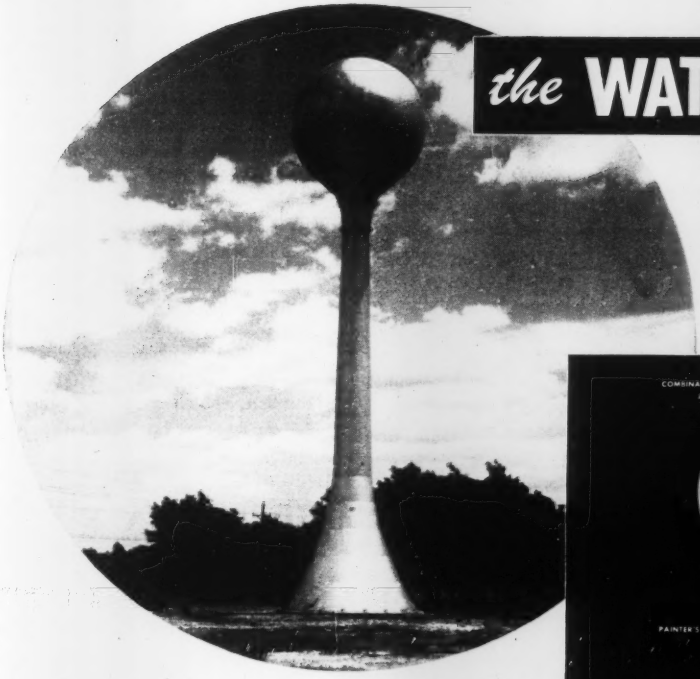
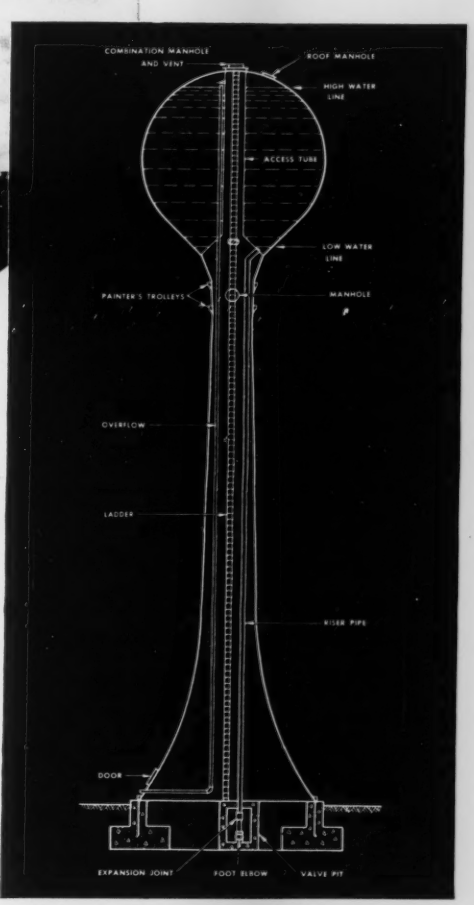
the WATERSPHERE



- Attractive Appearance
- Modern Design
- Simple Construction



The Watersphere impresses you first with its striking appearance—but it offers more than architectural beauty. It is used to provide dependable gravity pressure in municipal water systems. At industrial plants, the Watersphere furnishes the gravity water supply for general service or fire protection.

The simple construction of the Watersphere, as shown in the accompanying diagram, makes it easy to maintain. Smooth, butt-welded joints eliminate corners or edges that invite corrosion. An inside ladder simplifies the job of climbing the tank for inspection and painting.

The Watersphere is available in the capacities listed below. Special designs will be furnished for sizes over 100,000 gals.

WATERSPHERE SIZES

Capacity in Gallons	Diameter of Sphere	Diameter of Base in Feet and Inches			
		50 Feet To Bottom	75 Feet To Bottom	100 Feet To Bottom	125 Feet To Bottom
25,000	19' 6"	15' 10"	20' 4"	24' 10 5/16"	29' 2 7/16"
30,000	20' 6"	16' 0"	20' 5 1/16"	25' 0 1/8"	29' 4 1/16"
40,000	22' 6"	16' 10 1/32"	21' 3 9/16"	25' 10"	30' 4"
50,000	24' 2"	17' 6 1/2"	22' 0 31/32"	26' 6"	31' 0 1/4"
60,000	25' 6"	17' 7 5/8"	22' 6 1/16"	26' 7 7/8"	31' 0"
75,000	27' 3 13/16"	18' 8"	23' 1 1/8"	27' 1 3/4"	32' 2 3/16"
100,000	30' 0"	19' 6"	21' 8 7/8"	28' 4"	33' 7"

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Houston, 2 ..... 2109 National Standard Building
Havana ..... 402 Abreu Building
Los Angeles, 14 ..... 1511 General Petroleum Building
New York, 6 ..... 3311—165 Broadway Building
Philadelphia, 3 ..... 1623—1700 Walnut St. Building
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Plants in Birmingham, CHICAGO, SALT LAKE CITY, and GREENVILLE.

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How profit-wise contractors make low bids

Experienced contractors know it doesn't pay to make low bids without adequate profits. Yet thousands of actual examples prove that you ***can*** be in a sound competitive position by taking advantage of the time, labor and money-saving features of ARMCO Corrugated Metal Pipe.

Figured on an ***installed*** basis, ARMCO Pipe saves money in many ways. Although amply strong it often weighs only one-tenth as much as more massive types. This means low handling and hauling costs. Job costs go down because unskilled labor quickly makes the installation. There is no breakage, no curing, no waste, no delay.

Individual lengths of ARMCO Pipe or PIPE-ARCH are supplied in any length that can be hauled or handled. No large and expensive equipment is needed for installation. A few men with a rope sling or a small A-frame can handle the largest structure. Trenches only have to be wide enough for men to work since there are no bells or massive joints requiring hand excavation. Connections are made with simple band couplers. End finishing is easy and inexpensive with prefabricated ARMCO End Sections.

Bid low on that next contract with ARMCO Corrugated Metal Pipe. You will find it ideal for highway, railway, airport or municipal installations. Write for complete information. Armco Drainage & Metal Products, Inc., 2015 Curtis Street, Middletown, Ohio.

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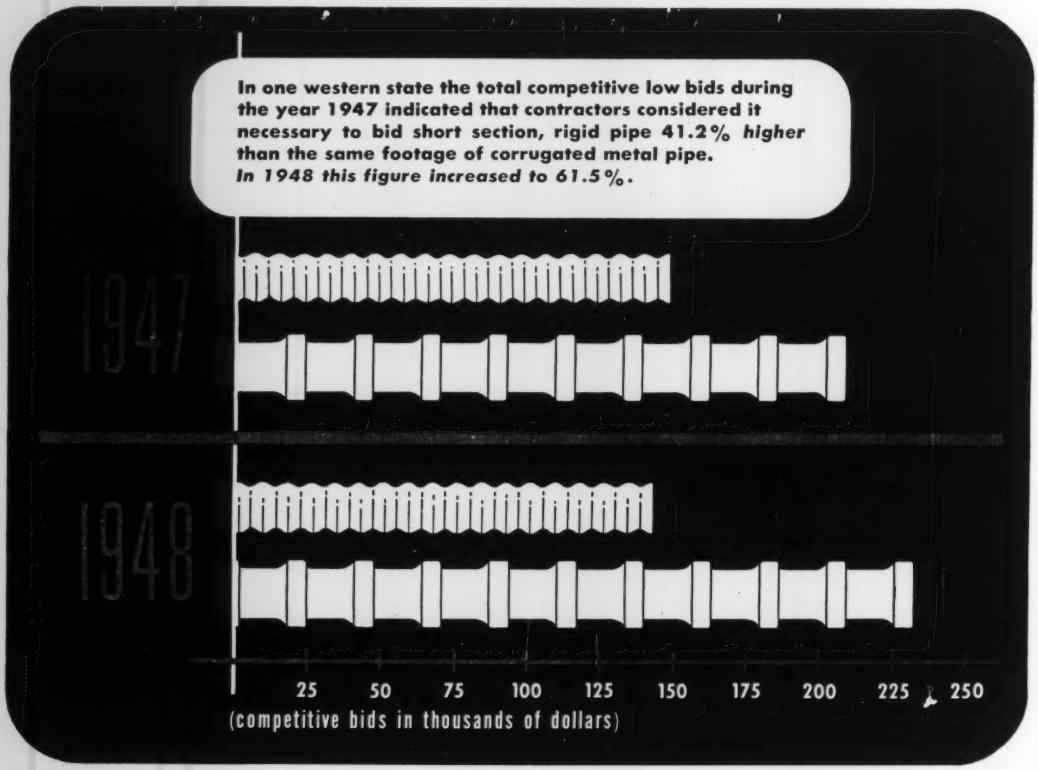
ARMCO DRAINAGE STRUCTURES


In one western state the total competitive low bids during the year 1947 indicated that contractors considered it necessary to bid short section, rigid pipe 41.2% higher than the same footage of corrugated metal pipe. In 1948 this figure increased to 61.5%.
1947
1948
25
50
75
100
125
150
175
200
225
250
(competitive bids in thousands of dollars)

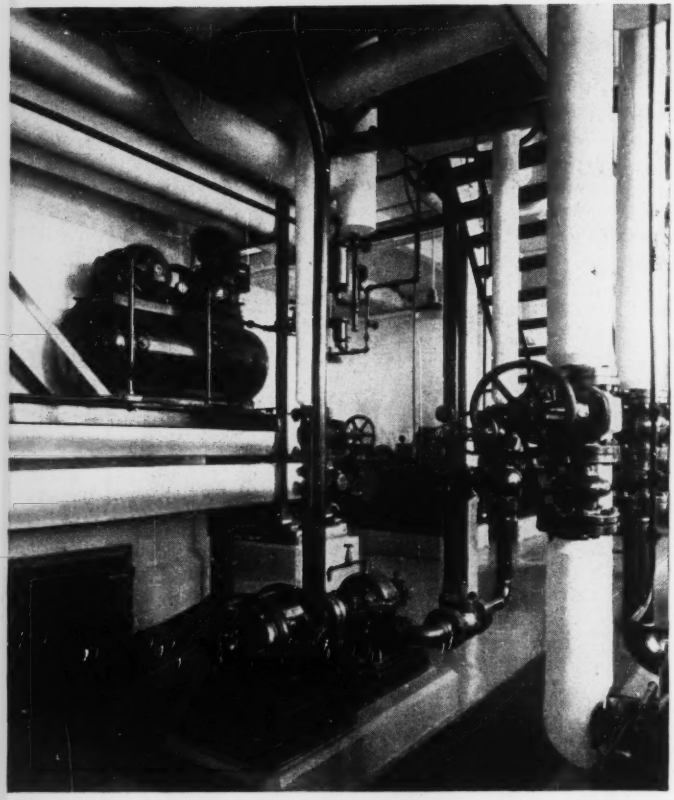
THE CONSTRUCTION WEEK

INTERIOR GOES TO COURT—Two significant pieces of litigation are occupying the Interior Department's legal talent these days. Each means much to the agency's plans for development of the nation's water and power resources. One case opened last week in federal court at Boise, Idaho. At bar is Interior's right to pre-condition an easement for a private electric utility right-of-way across government land in such fashion as to force the company to transmit federally developed power. The other case hasn't yet reached the courts—but it will if Interior doesn't win its point before the Federal Power Commission. It involves FPC's right to license a private hydro development on a stream for which a federal agency—here the Army Engineers—has prepared a development plan. FPC, having first refused, has now granted Interior's plea to intervene in a license application case by Virginia Electric and Power Co. Vepco wants to build at Roanoke Rapids, downstream from the Army's Buggs Island Dam whose energy Interior will market. Interior intervention in the FPC case paves the way for a court test if FPC grants the license.

POLITICS GOES WEST—Control of the Congress which is to be elected next year will be decided west of the Mississippi. Because of this fact, in one sense, at least, the construction industry can't lose—no matter who wins. For each party has wooed the west with heavy spending on public works. Democrats last weekend sent Vice President Barkley and five cabinet members to a San Francisco land-water-jobs meeting to extoll Fair Deal public power, irrigation and resource-development programs. Republicans have not cut down construction spending in the west, either as a minority party or in their own 80th Congress. A simple check on the election data shows why the west will be so vital: Half of the states where either party can win a Senate seat next year are west of the Mississippi. And of the 92 House seats at stake there, the present split is 47 for the GOP, 45 for the Democrats.

AGC LOOKS AHEAD—Construction may be booming, but contractors aren't becoming fat and lazy just because business is good. That's a major point in the survey completed recently by the Associated General Contractors. Another: This is the time when the public can get full value for its investment in construction. AGC found business conditions have stabilized for the construction industry; that costs are stabilized or declining slightly nationally, estimated now to stand 10 percent below the recent peak; materials, manpower and machinery are in good supply; labor productivity is up, and competition has become keen. There's ample capacity for more activity in all building categories, AGC reports. Contractors are cutting down on office overhead, reducing the size of between-job staffs, cutting equipment rental prices, eliminating overtime and narrowing profit margins. Better productivity was reported by 79 percent of those who replied. More than 90 percent reported adequate supplies or materials, machinery and equipment. Half those answering said more work is coming on the market, while 31 percent foresaw less work. Competition among bidders was reported by 94 percent, and 83 percent think now is the time to start jobs.

MISCELLANY—The Blaw-Knox Company is profiting from the Democrats' insistence on avoiding a mistake which cost the Republicans dearly, last fall. Blaw-Knox has received a contract from the Commodity Credit Corp., for the erection of storage facilities for 1,350,000 bushels of corn—in 30 universal farm buildings, 40 x 96 x 16 ft. GOP failure to provide ample crop storage facilities—so that farmers were unable to qualify for crop loans—helped President Truman win re-election last year, by giving him numerous Republican farm states, even though he lost such labor strongholds as New York and Pennsylvania. . . . There's a new bill before Congress which would define as a lobbyist anyone who, for compensation in excess of $1,000 yearly, undertakes to influence Congress by legislative representation on any matter pending before Congress. The President, cabinet members and heads and staffs of independent agencies are exempted, as previously. The proposal tightens up the existing lobby law, but it still fails to get at what many observers regard as the biggest lobby loophole—Washington's downtown law firms whose people never appear on Capitol Hill but who win a lot of votes and influence much legislation . . . Navy resentment at the armed forces unification gag rule is matched within the Corps of Engineers by bitterness against the order not to reply to charges that the Corps is inefficient and guilty of lobbying, particularly against changes proposed by the Hoover Commission. Washington observers insist that morale has fallen badly, within the Corps, because of such Congressional and press attacks. Increasing resignations, by civilian employes and officers as well, is an anticipated by-product of this tangle.



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Where K&M "*Featherweight*"® 85% Magnesia

Keeps up steam...keeps down cost...for 14 miles

Pratt & Whitney Division of Niles-Bement-Pond Company, West Hartford, Conn., has long been noted for fine machine tool, cutting tool and precision gauge manufacture. The scientific attitude is a Pratt & Whitney habit. They applied it to saving b. t. u.'s along 14 miles of steam lines throughout their large power plant and shops. That led them to use K&M "Featherweight" 85% Magnesia pipe insulation for maximum efficiency and permanence.

The inherent insulation effectiveness of K&M "Featherweight" 85% Magnesia comes from basic Carbonate of Magnesia. This is combined with clean Asbestos Fibre in correct proportion for needed weight-saving strength. Therefore it is easy to do a fast, shipshape insulation job whose continued efficiency does not depend on costly maintenance.

Designed for temperatures to 600° F., K&M "Featherweight" 85% Magnesia comes in all standard sizes. Like the other K&M insulation materials, it can save you waste—difficulty—money. Get help on any points by consulting your nearest K&M Distributor—an insulation expert.

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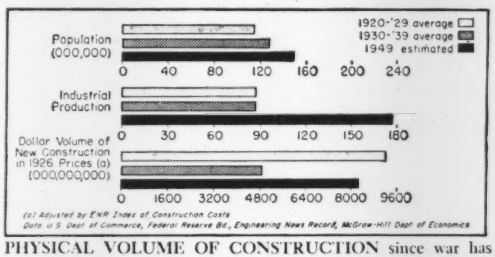
CONSTRUCTION TRENDS


1920-'29 average
1930-'39 average
1949 estimated
Population (000,000)
0 40 80 120 160 200 240
Industrial Production
0 30 60 90 120 150 180
Dollar Volume of New Construction in 1926 Prices (a) (000,000,000)
0 1600 3200 4800 6400 8000 9600
(a) Adjusted by ENR Index of Construction Costs.
Data: U.S. Dept. of Commerce, Federal Reserve Bd., Engineering News Record, McGraw-Hill Dept. of Economics

PHYSICAL VOLUME OF CONSTRUCTION since war has not yet passed level of '20's, even though United States population has increased sharply and industrial production has doubled.

Construction Prospects for the Fifties—I

Where is construction going in the next 10 years? This may be a fruitless question and yet it may be worthwhile to pursue it as far as analysis and speculation will permit . An obvious approach is to compare this postwar period with the last—the years of the 1920's—when construction had one of its greatest booms.

In the '20's, the country had an average population of about 114 million. This year, the population will pass 150 million. Within ten years, it will be 160 million. In the '20's, industrial production, as measured by the Federal Reserve Board Index of Production, was about one-half of what it is now. The Index (1935-39 = 100) averaged 87. It was an estimated 169 last August; last fall it peaked at 195. By either, the country is twice its size of 20 years ago—production-wise.

In short, as a country, we shall have in the 1950's a population one third larger and industrial production twice as great as we had in the 1920's.

In the '20's, construction, as estimated by ENGINEERING NEWS-RECORD, averaged about $9 billion a year. With our one-third larger population, that would suggest a volume of $12 billion a year if prices were the same as they were in the mid '20's. Allowing for cost increases since then, it seems reasonable to expect construction to run about $20 billion a year through the '50's.

Currently, construction volume is rising faster than is the national income. It is approaching 10% of national income—a relationship considered normal in prosperous peacetime years. If it should again reach 10% —or top it as it did in the late '20's—volume will be well over $20 billion a year.

Then too, the nation, because we did not keep up with our normal needs for new construction during the depression and war, still has a huge backlog of construction. It has been estimated that it runs to $100 billion or more for public construction alone. The country's highway needs, for example, have been estimated at upward of $60 billion.

If the U. S. goes to work in the next 10 years to make good the time lost, that will add several billon dollars a year to normal construction volume.

As compared to its role in the 1920's, the federal government is now a giant in the construction business. In the days of Harding and Coolidge, federal construction appropriations were about $200 million dollars a year. Some of the growth in federal activity since then, of course, represents work that might under other circumstances be done by states and cities. Nevertheless, the federal construction budget is running at a rate close to $3 billion a year now—and is increasing. This includes aids and grants to others, as well as construction by federal agencies. The new public housing program alone may go to as many as 200,000 units a year —more than 20% of last year's record total homebuilding.

State and local construction work has been held back since the end of the war by shortages of materials and labor. But it is rising now, promises to go still higher. In all, there is in sight a volume of public works three or more times bigger than the program of the '20's.

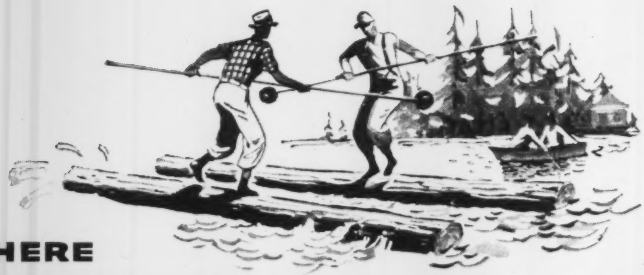
The country's higher living standards also point to a higher volume of construction. Today's single family suburban home, or towering city housing project, is a long step from the two- or three-family "flat" or four-story walk-up tenement of 25 years ago. And today's speedway is a long step from the two-lane highway of the early '20's. The higher living standards go, the more construction work is involved.

Then too, there are new types of construction that were not important in the past. Airports, in the 1920's, for example, were as likely to be cow pastures as not. Today, farmers are rich compared to what they were in the '20's and '30's—and they are demanding better farm roads, drainage programs, and other development. Here alone is a construction market that might run up to half a billion dollars a year.

Looking at construction's prospects this way, the prospect is for years of work at today's pace—$19 billion annually—or even more.

And when you add up prospects for each class of work—as a Trend in the near future will try to—you come to about the same conclusion:

Construction's prospects over the next ten years are very good.



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Foreign Development Success

ENACTMENT OF LEGISLATION extending the life of the Institute of Inter-American Affairs five years, to June 1955, is solid recognition of the efficacy of its achievements in Latin America. Born in 1942 as a war-supporting agency to facilitate extraction of such vital raw materials as quartz, mica, iron ore and rubber, the Institute has expanded its outlook and contributed substantially to the general welfare and economic development of backward areas.

But more importantly, it has become a strong right arm of American foreign policy. With 25 co-operative work programs in operation, nationals below the border are enjoying undreamed-of benefits of improved sanitation, greater agricultural output and additional educational opportunities. Contrasted with the well-publicized, "hit-and-run" exploitations of some foreign companies in the past, these activities stand out in bold relief as tangible proof of Uncle Sam's democratic good will. In addition, the easy, wordy promises of the Communist agitator sound hollow against such substantial performance.

The $35,000,000 authorized by the new law for the Institute's ventures is a small sum to invest in programs that are now so politically strong that participating countries are contributing four to five times the United States allotment. The success of this government-financed program, however, should not be permitted to set a precedent for all of our efforts to stimulate economic development in backward but resource-rich regions of the world. Private capital, if given encouragement and a modicum of backing by the government, can accomplish similar results—and with no expense to the American taxpayer.

River Basin Policy

THE PRESIDENT'S RECOMMENDATION that the future of California's Central Valley project be placed in the hands of the Department of the Interior's Bureau of Reclamation is a sound one under the circumstances. The circumstances could have been different if the state had continued the project as its own, and not called on the federal government for help. And they could have been different, and more to the liking of many Californians, if the Department of the Interior, with its zeal for a great federal public power system, had not been the federal agency chosen to provide the help.

However, since the time that the state turned the project over to the federal government, the Bureau of Reclamation has done the major share of the planning and construction, while the Corps of Engineers, the alternative available federal agency, has handled only a few Central Valley jobs. Two federal agencies in such a unified region cannot operate as effectively as one.

The recommendation made to Congress by the President, however, has a broader implication. Basically it repeats the challenge to Congress, first posed by the Hoover Commission, to set up a competent board having responsibility for integrated development of the nation's water resources. It is possible to read into the President's remarks on the Central Valley situation a suggestion that all multi-purpose projects be channeled to the Bureau of Reclamation by executive fiat concurred in by Congress. If that is his intent it is a backstairs approach to a problem that should not be solved in that way. Too many vital issues are involved that require full and free debate.

For example, are civil works construction functions for the Corps of Engineers desirable and necessary for the public welfare? We believe that they are. Is the Department of the Interior, of which the Bureau of Reclamation is the construction agency, justified in promoting the building and operation by it of power transmission lines when experienced private enterprise under government regulation is available to handle this task? We believe it is not. Is the Bureau of Reclamation competent to design, build and administer multi-purpose reservoir projects? We believe that it is. Can the Corps of Engineers do an efficient multi-purpose reservior job? We believe that it can.

These are merely typical questions and answers. There are other questions, and there are different answers. Debate on all of them should be undertaken in Congress as the first step in developing a sound and widely-acceptable policy of river basin development and providing the machinery for carrying it out. Adoption of the President's Central Valley proposal (if it is adopted) will be merely a palliative and not a pattern for the action that is needed.

Efficiency the Only Hope

IN FOUR JUMPS SINCE MAY, the ENR Construction Cost Index has erased the drop that occurred in the first half of the year. Any chance for lower construction costs through wages or material prices is, therefore, slim, and greater efficiency remains as the only hope. Fortunately, it is not a dim one. By careful designing, close bidding and greater productivity on the job, costs already have come down substantially. There is a need for them to come down farther, and the construction industry has never lacked the will nor the incentive to keep trying. In the months to come, design ingenuity and construction initiative and productivity will more than ever comprise the ingredients of success.

ENGINEERING NEWS-RECORD

SEPTEMBER 22, 1949 VOL. 143 NO. 12

Omnibus rivers bill aims at 3-year money needs

Rivers and harbors work gets smaller share of funds than flood control in bill passed by House—Most of money—79 percent—goes to existing projects

The $1.1 billion omnibus authorization bill passed recently by the House aims to estimate and approve the additional money requirements that will be needed in the next three years for rivers and harbors and for flood control. In round figures, the increased authority in the bill amounts to $1 billion for flood control and $120 million for navigation works. Something may be added to those totals in the Senate, where the bill is now before the Public Works Committee.

For rivers and harbors, the bill recommends authorization of 62 new projects costing some $46,000,000, plus about $74,000,000 for additional works on two navigation plans previously approved. Of the much larger flood control authorization, only 21 percent is for new projects. The remainder consists entirely of added monetary authority to continue construction work under plans already being carried out in accordance with previous Congressional approval.

Considerable authority still remains available out of previous flood control bills, but it is not adequate in amount —or in distribution among various basins and projects—to permit orderly progress during the next three years.

Tied up in conference

Should Congress approve the $460 million flood control appropriation voted by the Senate for fiscal 1950, the overall money authorization still unused would be reduced to a little more than $1.1 billion. House and Senate conferees have been battling over the appropriation figure for three months; the House wants to cut it—and the accompanying rivers and harbors appropriation in the Civil Functions Bill—by 15 percent.

Passage of the new authorization bill would increase the total of flood control authority for the next three years to more than $2.1 billion. To carry out the national flood control program, comprising nearly 1,000 projects throughout the country, Congress, in preceding years, has appropriated a total of nearly $2 billion dollars. Overall cost of the program is estimated at $7.5 billion.

Construction costs rose

Largest authorization items in the present House-approved bill are $250 million dollars for the Missouri River basin and $200 million for the lower Mississippi. Both these authorizations would be for continuation of projects previously approved. The Missouri River item would permit uninterrupted work to proceed on projects now under construction, but would not permit initiation of any new projects.

The $200 million recommended for the lower Mississippi is an increase to take care of higher construction costs of work authorized in past years. Some of the estimates for flood control in the lower Mississippi Basin were prepared so long ago that they are entirely out of line with current costs. Other large increases — to continue work on approved projects—include $75,000,000 for the Ohio River Basin and $40,000,000 to each of these three basins: the Savannah River, the Willamette River, and the Los Angeles and San Gabriel Basin. For the same purpose of maintaining progress on approved programs, $35,000,000 is recommended for the White River Basin, and $34,000,000 for the Rio Grande developments.

To start work on new projects, the bill would authorize $36,000,000 for the Grand (Neosho) River, $31,000,000 for a dam at Albeni Falls on the Pend Oreille River in Idaho, $26,000,000 for the South Platte River Basin, Colorado, and $20,000,000 for the St. Francis River, Missouri and Arkansas.

(*Continued on page 16*)

BIG MUDDY in flood looks like this—only lots worse. Here, technicians at Corps of Engineers' Waterways Experiment Station make final adjustments to discharging and recording devices on Omaha-Sioux City section of the Mississippi River model. A public address system keeps technicians in touch with central control house. When photo was made, rate of flow in the model represented 500,000 c.f.s. flood on Missouri.

Federal-aid highway funds allocated

States and territories will share a $433 million federal highway aid allocation next week. It'll be two months early—at the request of several states which want to get started on urgent improvements.

Commerce Secretary Charles Sawyer disclosed the allocations last week. They become available Oct. 1 for the fiscal year 1951, which opens next July 1. Part of $450 million federal-aid grant under the Highway Act of 1948, these funds must be matched by the states, a requirement which will insure almost a billion dollars for highway work during fiscal 1951.

Apportionment is based on area, population (total or rural), and post-road mileage. Changes from the fiscal 1950 allocations may be computed by referring to the list of allocations for the present year (ENR July 22, 1948).

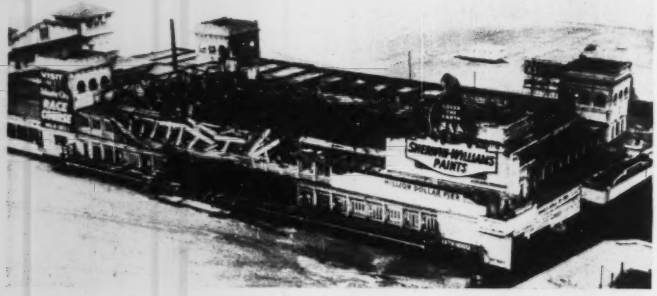
The funds are to be used for three types of roads—45 percent for primary roads in the federal-aid system, including urban extensions; 30 percent for the improvement of roads in the secondary federal-aid system, and 25 percent for work on federal-aid roads in urban areas whose population is 5,000 persons or more.

Funds are adminstered by the Bureau of Public Roads, in cooperation with state highway departments. State agencies initiate all projects, prepare plans, let contracts and supervise construction. All steps are subject to federal approval. This allocation will remain available until June 30, 1953, according to terms of the act. This gives 45 months for the states to match the funds.

State allocations may be reduced if road-user revenues—gasoline taxes, registration fees, etc.—are diverted from highway purposes in violation of the Hayden-Cartwright Act of 1934. This proviso is intended to prevent any increase beyond the 1934 rate of road-user-revenue diversions to non-highway expenditures.

Here's how states share $433 million federal highway aid

State	Sums Apportioned For: Federal-Aid Primary System	Secondary or Feeder Roads	Urban Highways	Total
Alabama	$4,263,373	$3,367,109	$1,157,921	$8,788,403
Arizona	2,884,918	1,995,026	232,926	5,112,870
Arkansas	3,440,900	2,767,936	495,958	6,704,794
California	8,037,278	4,602,788	7,216,292	19,856,358
Colorado	3,575,649	2,406,251	829,510	6,811,410
Connecticut	1,242,466	682,562	2,316,659	4,241,687
Delaware	974,531	649,688	181,297	1,805,516
Florida	2,904,565	1,945,506	1,421,220	6,271,291
Georgia	5,017,556	3,828,985	1,441,091	10,287,632
Idaho	2,471,847	1,728,865	188,176	4,388,888
Illinois	7,798,916	4,189,809	8,449,887	20,438,612
Indiana	4,741,346	3,179,477	2,723,787	10,644,610
Iowa	4,913,437	3,513,955	1,414,525	9,841,917
Kansas	4,956,553	3,481,866	983,721	9,422,140
Kentucky	3,772,305	3,050,595	1,154,581	7,977,481
Louisiana	3,052,605	2,281,103	1,360,748	6,694,456
Maine	1,717,684	1,238,176	498,017	3,453,877
Maryland	1,635,712	1,045,942	1,590,418	4,272,072
Massachusetts	2,619,300	702,068	5,875,054	9,196,422
Michigan	6,057,777	3,663,373	5,048,623	14,769,773
Minnesota	5,345,224	3,682,804	1,960,081	10,988,109
Mississippi	3,672,990	3,016,921	553,179	7,223,090
Missouri	5,910,889	4,049,345	2,799,683	12,759,917
Montana	4,051,448	2,767,823	273,348	7,092,619
Nebraska	3,944,850	2,785,550	695,466	7,425,866
Nevada	2,562,973	1,717,361	53,853	4,334,187
New Hampshire	974,531	649,688	422,019	2,046,238
New Jersey	$2,547,926	$ 927,560	$4,911,404	$8,386,890
New Mexico	3,231,155	2,236,700	228,567	5,696,422
New York	9,621,543	3,792,806	16,681,818	30,096,167
North Carolina	4,877,462	3,990,309	1,326,007	10,193,778
North Dakota	2,948,287	2,125,686	190,644	5,264,617
Ohio	6,940,178	4,083,099	6,698,622	17,721,899
Oklahoma	4,490,377	3,298,766	1,197,791	8,986,934
Oregon	3,325,613	2,269,150	720,430	6,315,193
Pennsylvania	8,151,917	4,676,549	9,344,128	22,172,594
Rhode Island	974,531	649,688	997,786	2,622,005
South Carolina	2,720,661	2,244,168	581,082	5,545,911
South Dakota	3,109,459	2,214,296	197,342	5,521,097
Tennessee	4,271,311	3,282,043	1,415,352	8,968,706
Texas	12,683,893	8,933,674	3,966,153	25,583,720
Utah	2,265,127	1,508,492	385,353	4,158,972
Vermont	974,531	649,688	188,251	1,812,470
Virginia	3,671,363	2,846,104	1,324,938	7,842,405
Washington	3,142,071	2,127,490	1,303,754	6,573,315
West Virginia	2,212,327	1,857,719	717,603	4,787,649
Wisconsin	4,792,360	3,246,382	2,358,393	10,397,135
Wyoming	2,470,864	1,676,874	118,209	4,265,947
Hawaii	974,531	649,688	349,535	1,973,754
Dist.of Columbia	974,531	649,688	1,018,601	2,642,820
Puerto Rico	992,609	1,010,309	741,447	2,744,365
National Totals	$194,906,250	$129,937,500	$108,281,250	$433,125,000



ARSON IS SUSPECTED in the $250,000 fire which destroyed a portion of Atlantic City's Million Dollar Pier last week, soon after it had closed for the winter.

State wins nominal judgment against Los Angeles in Owens River Valley case

Claim was city's dumping of excess water from the aqueduct injured mineral deposits in the dry Owens Lake—Power plants at stake

Long-fought litigation in which the state of California sought $1,116,820 damages from the city of Los Angeles for alleged permanent injury to mineral deposits in Owens River valley ended with a $6,800 judgment by a Santa Barbara Superior Court in favor of the state.

This and a companion case now pending before the California State Supreme Court which would enjoin Los Angeles from dumping excess water from the Los Angeles Aqueduct into the Owens (dry) Lake may decide to what extent Los Angeles can make use of its Owens River Gorge power plants now under construction.

In the judgment handed down in Santa Barbara, the court denied the state's contention that the city of Los Angeles had done permanent damage to mineral deposits in Owens Lake by releasing excess waters stored above the lake during the wet seasons of 1937-38-39. The court further denied that Los Angeles had operated its aqueduct with negligence, and ruled that the state and operators of mineral processing plants near the lake should have expected release of excess water, which is far greater than the aqueduct's capacity, during wet seasons.

The State of California entered the case because it had been collecting royalties from the Natural Soda Products Co., which operated a 90-ton-per-day Deka plant on Owens Lake brines, and which operation was suspended because the lake was flooded by waters released from the 16,405 acre-ft. Tinemaha reservoir in 1937. The award of $6,800 to the state compensated for royalty losses during the inoperation of the Deka plant.

The importance of the judgment—and the outcome of the pending appeal of injunction granted by a Riverside, Calif., court to restrain the city of Los Angeles from dumping excess waters into Owens Lake—revolves around the operation of the Owens River Dam and Owens River Gorge power stations.

The decision handed down, while granting the state royalty rights for one of the periods during which the lake was flooded, goes on to deny the state's contention that because the lake has been dry since 1913, when the Los Angeles Aqueduct began operation, that it must necessarily remain dry.

The Riverside injunction against flooding the lake, should it be upheld by the California State Supreme Court, might limit use of the reservoir and hydro-electric facilities in Owens River Gorge.

Deny permanent damage

The Santa Barbara judgment further denied any permanent damage whatever to the salt body or brines of Owens Lake as a result of either the 1937 flooding, or subsequent floodings.

The state's contention that because the city of Los Angeles over a period of time took substantially the entire river flow and thus dried up Owens Lake, that the city is obligated for all times to keep the lake dry, was overruled as impracticable.

In a suit in 1913, involving the older and now defunct Natural Soda Products Co., the city of Los Angeles settled for $15,000 because of its diversion of water from the lake.

During the spring of 1937 the city diverted 50,000 acre-ft. of water into Owens Lake and lost a judgment of approximately $180,000 brought by another company of the same name, Natural Soda Products Co., because flooding suspended operations. This was the amount upon which the state was awarded $6,800 lost royalties.

Florida flood control to start in 60 days

Work on the first phase of a $208,000,000 flood control program over a 10-year period is to get under way within the next 60 days, according to Col. R. W. Pearson, district engineer at Jacksonville, Corps of Engineers.

Contracts for the first-phase work are to be let on projects designed to protect East Coast cities.

Colonel Pearson, who recently was assigned to Jacksonville as district engineer, said he had been advised by the Chief of Engineers to "commence operation in an amount totaling $774,000."

While this is a starter, it is expected that the Congress will provide sufficient appropriations at this session to get the program under way. This work will include levees and dikes to protect the East Coast cities.

The Federal Government has approved an outright grant of 85 percent of the over-all program of $208,000,000, with Florida to provide the other 15 percent of the cost, plus rights-of-way and other needed lands for levees, dikes, canals and reservoirs.

Waterways experiments begin soon at Clinton

What happens during a Missouri River flood? Some of the answers will be sought, soon, at Clinton, Miss., by the Corps of Engineers' Waterway Experiment Station.

First completed section of its 200-ac. model of the Mississippi River and tributaries is the 100-mi. Omaha-Sioux City reach. Model water levels are recorded to 1/1,000 ft., representing ¼ ft. in the prototype. Rates of flow, through orifices graduated from 0.06 g.p.m. to 100 g.p.m., are controlled automatically from a central point.

The model is being built to scales of 1 to 2,000 horizontally and 1 to 100 vertically (ENR May 31, 1945, vol. p. 766). H. G. Dewey, Jr., is in charge of the project, under the direction of Lt. Col. Ralph D. King, director of the station.

Tunnel suit thrown out in Maryland; file appeal

A Maryland judge has refused to force the state to ask tunnel bids before proceeding with construction of a bridge crossing the Chesapeake Bay. An appeal was filed.

Circuit Judge Joseph Sherbow ruled in part as follows:

"A court of equity has no power to compel the State Roads Commission to select a tunnel or a bridge; it has no power to compel the commission to obtain bids for a tunnel in order to make a comparison with bids for a bridge; it cannot restrain the commission from awarding contracts for the bridge while determining costs of a tunnel."

City Councilman Charles Masson, who sought the injunction (ENR Sept. 15, p. 27), sought a reversal of Sherbow's ruling in the Maryland Court of Appeals. Tunnel proponents argued their scheme would save $3,000,000. Estimated cost of the bridge is $34,000,000.

Downsville diversion tunnel now in use

Still another step in the program to tap the Delaware River for New York City's water supply was to be taken this week with diversion of the river's east branch into a tunnel by-passing a damsite.

The tunnel, 40 ft. in dia., will carry water around the Downsville damsite, where a rolled-earth dam will be built above a concrete cut-off now under construction. The dam will impound water for a 335,000-gal. daily addition to New York's water supply. A 25-mile tunnel to pass water from Downsville to the Rondout Reservoir has just been put under contract. Completion of the Downsville project is scheduled for 1955.

Bypasses cost $5,000,000

Maryland is spending almost $5,000,000 on bypasses at five communities. Perhaps the most strategic is a $954,000 job which will let the Baltimore-Washington highway go around, rather than through, Laurel. But the most expensive is at Wye Mills, an extension of the Easton bypass, which will cost $1,379,000.

A third will bypass Marlboro, at a cost of $1,300,000. The Queen Anne and Hillsboro bypass will cost $813,000, and the Greensboro job $353,000.

TRAMWAY TOWER for aerial cableway up Mt. Hood, the first of 38 which will be needed to support the 3.5-mi. line, is raised at lower terminus of the lift. Forty passengers will be accommodated in each of two cars. The run will require 10 minutes.

Avoiding overtime will cost more soon

Revision of regulations proposed by Wage-Hour Administrator William R. McComb would:

1. Increase the minimum salary which must be paid 2,500,000 so-called white-collar workers in order to exempt them from overtime pay, and

2. Clarify the duties test for determining which white-collar workers are not entitled to overtime pay by law.

Employers and other interested parties have until Oct. 10 to submit written comments to the administrator's proposed revision of Part 541 of his regulations.

The 1938 Fair Labor Standards Act exempts five groups of workers from the 40-cent minimum wage and 40-hour week, but leaves definitions to the wage-hour administrator.

The proposed revision, likely to be put into effect shortly after Oct. 10, had been drafted last April. It was ready for issuance last month (ENR, Aug. 18, p. 17) but was held up.

McComb would raise the salary yardstick for executives from $30 to $55 a week. Minimum salary for administrative and professional employees would be $75 a week instead of the present $200 a month.

Here is how the duties are clarified:

Executive—must perform managerial functions. Non-exempt activities—those not directly related to executive functions—must not exceed 20 percent of the executive's own weekly hours. (Now, non-exempt work is limited to 20 percent of weekly hours worked by non-exempt employees under the executive's supervision.)

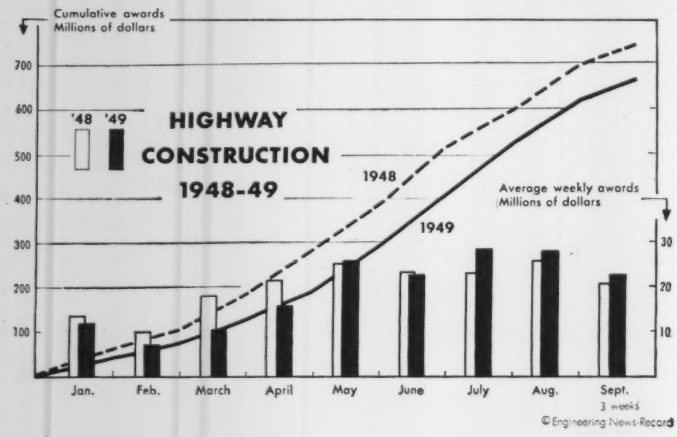
Administrative—must perform work of substantial importance in the management of a business. Non-exempt work is limited to 20 percent of his weekly hours. (The regulations now do not clearly specify a primary duty test and contain no provision permitting non-exempt work.)

Professional—must perform work requiring advanced knowledge in a field of science or learning or perform creative work in an artistic field. Non-exempt work is limited to 20 percent of his own weekly hours. (Present regulations do not clearly specify a primary duty test and non-exempt work is limited to 20 percent of the weekly hours worked by non-exempt employees.

As to all three of the above groups, McComb proposes a new provision which would make it easier to exempt those earning $100 a week or more.

McComb feels that the higher salary test for exempt white-collar workers will be in line with the increase from 40 to 75 cents in the minimum wage coming out of Congress. It will not "materially change" exemptions.

CONSTRUCTION BUSINESS



Record highway awards reduce '49 lag

A late-summer boom in highway construction activity has boosted 1949 volume to within 7 percent of the record high 1948 totals, according to a mid-September tally of construction reports to ENGINEERING NEWS-RECORD.

July and August highway awards broke all postwar records, averaging almost $29 million per week, and September volume during the first three weeks has averaged nearly $23 million. This compares with an average $11 million weekly during the first four months of the year, and a low of $7 million weekly in February.

The faster pace for highway awards began in May with an average of $25.8 million weekly, the first monthly rate to top 1948. Since then the gap between this and last year has narrowed steadily from April's 30 percent lag, to the current 7 percent.

The July highway volume of $28.9 million is 11 percent above the previous postwar peak of August 1948, and August this year topped it again by 10 percent at $28.5 million. September's highway awards are running 12 percent above a year ago at the end of the first three weeks.

Rise in utility building makes '49 industrial peak

Industrial building in the first eight months of 1949 totals $699.9 million—the highest volume for that period in any year since the war. In 1946 the figure was $693.5 million, but by weekly averages that is four percent less than this year's rate, as reported to ENGINEERING NEWS-RECORD.

Public utility expansion is the backbone of 1949 industrial construction. A total of $204 million utility awards is 106 percent higher than volume a year ago for the eight month period. Process industries have the second largest construction record for this year, $201.6 million, but this is 25 percent below the process industry volume last year and 23 percent below the eight-month total for that type of construction in the big year of 1946.

Other industry groups leading last year in new construction are metal refining and rolling, up 230 percent to $34.8 million; food, up 21 percent to $60.1 million; radio, up 109 percent to $953 thousand; textiles, up 35 percent to $8.5 million; refrigeration, up 33 percent to $1.8 million; and general, up 7 percent to $74 million.

Lower than last year, in addition to process industries, are machine and machine parts, down 13 percent to $62 million; automotive service, down 35 percent to $21.7 million; railroad service, down 10 percent to $6.3 million; foundries, down 84 percent to $743 thousand; aircraft industry, down 83 percent to $220 thousand, and wood industries down 26 percent in new construction to $3.6 million.

All industrial building reported through August led 1948 by 11 percent. In July it was lagging two percent behind. But the near postwar record for August of $37 million per week has pushed 1949 over the previous year's mark.

Backlog up $238,000,000

The construction backlog increased by $238 million during the month of August, according to a month's-end tally of new proposed work reported to THE CONSTRUCTION DAILY. This put the total heavy construction reserve up to $45.7 billion, a ½ percent net increase since July.

Seven classes of construction show backlog increases in August: waterworks are up $4.7 million; sewerage $12.2 million; highways $13.9 million; public building $61.7 million; commercial building $29.9 million; private unclassified a thumping $144.1 million; and public unclassified increased $2 million.

Four groups declined, including both public and private bridge construction down $3.6 million and $350 thousand respectively. The backlog of earthwork projects was diminished by $8.5 million, and the industrial building reserve by $18.4 million.

In only one case did the addition or reduction for any classification exceed one percent. The $144.1 increase in the private unclassified backlog is a 3.3 percent rise.

Cement price boosted 10¢

Both Pennsylvania-Dixie Cement Company and North American have a ten-cent per barrel across-the-board increase in cement prices, effective October 1.

Back of their increase, according to a Penn-Dixie spokesman, is the third-round freight rate increase for inbound materials effective September 1. At that time a firm ten percent increase was granted railroads, in place of the temporary six percent rise then in effect.

The new Penn-Dixie bulk price is $2.40 per barrel. Paper packaged cement will be 25 cents higher.

Except for a revision of delivered prices in distant market areas caused by the abandonment of the basing point system in July last year, this is the first price increase by a Lehigh Valley producer since December 1947.

Housing boom continues

New home building starts totaled 98,000 in August, as the late-summer housing boom carries into its fourth straight month. Residential building in 1949 now lags only two percent behind last year, due to the 97,000 unit-a-month average since May, reported by the Bureau of Labor Statistics. The total is 647,500 units for 1949 to date.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 52, went to press.)

Testing Station—U. S. Atomic Energy Commission, 1901 Constitution Ave. N.W., Washington, D. C., plans an atomic reactor testing station near Pocatello, Idaho, to cost $100 million. The engineer-architect is Blaw-Knox Co., Chemical Plant Division, Pittsburgh, Pa.

Gas Pipeline—Eastern Natural Gas Corp., Houston, Tex., will construct a 292-mi. natural gas pipeline from Phoenixville, Pa., to Boston, Mass., at a cost of $28,000,000. Fish Engineering Co., Houston, is consulting engineer.

Veterans Hospital—U. S. Engineers, Army Base, Boston, Mass., will take bids about Jan. 15 for 14-story veterans general hospital with 2 penthouse floors, staff and nurses quarters, boiler plant, garages, etc., to cost $20,000,000, at South Huntington Ave. and Heath St., Roxbury, Mass. Coolidge, Shepley, Bulfinch & Abbott, Boston, are architects.

Clinical Center—John McShain, Inc., Philadelphia, Pa., has been awarded contract to construct superstructure for Clinical Center, at National Institute of Public Health, Bethesda, Md., by Public Buildings Administration, Washington, D. C., at $16,814,200.

Dormitories—University of Washington, Seattle, Wash., will construct dormitories to house 2,000 students at a cost of $10,000,000.

Apartments—H. B. Deal & Co., St. Louis, Mo., has been awarded contract to construct 42 two-story garden apartments with 20 units each in Toledo, Ohio, by Archie Stone and Jack Brown, Toledo, to cost $9,000,000. P. J. Bradshaw & Associates, St. Louis, are architects.

Housing—Amarillo Housing Authority, Amarillo, Tex., plans 800 low-rental housing units at $6,800,000.

Schools—Board of Education, Springfield, Ill., plans high school and two grade schools to cost $5,951,000, in Springfield. Perkins & Will, Chicago, are architects.

Housing—El Paso Housing Authority, El Paso, Tex., plans 660 low-rental housing units in El Paso to cost $5,789,000.

Sewers—City of East St. Louis, Ill., will vote on $2,500,000 bonds on April 4, 1950, to finance shore modernization; extend East St. Louis sewer system, including main trunk line sewer to cost $3,000,000; and system of lateral and connecting relief sewers $6,000,000. The East Side Levee & Sanitary District, East St. Louis, which is co-owner, will issue $3,000,000 bonds if city issue is approved. Horner & Shifrin, St. Louis, Mo., are consulting engineers.

Reservoir—Public Utilities Commission, City Hall, San Francisco, Calif., will hold election Nov. 8 to vote on $4,000,000 bonds for reservoir on Cherry Creek tributary of Tuolumne River.

Housing—Lubbock Housing Authority, Lubbock, Tex., will build 350 low-rental housing units in Lubbock at $3,062,500.

Flood Control—San Jacinto River Conservation & Reclamation Dist., Conroe, Tex., plans flood control projects near Dobbin, Sect. 1, Lake Creek Dam to cost $2,750,000; and near Conroe, Sect. 2, Lake Creek channel improvements at $750,000. Freese & Nichols, 407 Danciger Blvd., Fort Worth, Tex., are consulting engineers.

Hospital—Methodist Hospital, 3020 San Jacinto St., Houston, Tex., will take bids for an 8-story, basement, 300-bed general hospital with partial air-conditioning to be built in Texas Medical Center, Houston, at $3,500,000, and a laundry at $75,000. Watkin, Nunn, McGinty & Phenix, Houston, are architects; Walter P. Moore is engineer; and Ray L. Jenkins is mechanical engineer.

School—Shawnee Mission School District, Merriam, Kans., will take bids Oct. 20 for a high school in Merriam to cost $2,684,800. Perkins & Will, Chicago, and Marshall & Brown, Kansas City, Mo., are architects.

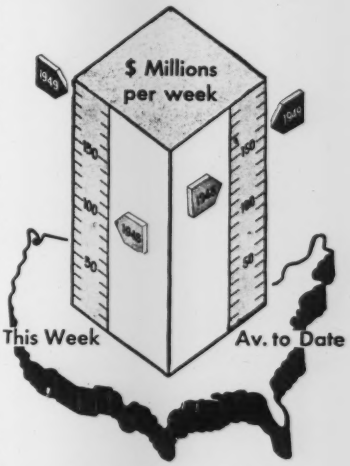
Hospital—Catholic Third Order of St. Francis, Springfield, Ill., plans a 6-story, 150-bed hospital, including home and chapel, in Effingham, Ill., at $2,950,000.

Housing—Housing Authority of Brownwood, Tex., plans to build 300 low-rental housing units, at $2,635,000.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Sept. '49	479.78	230.63
Building Cost	Sept. '49	351.92	190.24
Volume	Aug. '49	352	152



Activity This Week

As reported to ENR (in millions of dollars)

Amount of Contracts let

	Week of Sept. 22 1949	Cumulative 1949 (38 wks.)	1948 (39 wks.)	% chge av.wk.
Federal	$28.7	$819.3	$736.8	+14
State & Mun.	64.3	2,373.2	1,951 4	+25
Total Public	$93.0	$3,192.5	$2,688.2	+22
Total Private	95.7	2,814.7	2,460.0	+17
U. S. Total	$188.7	$6,007.2	$5,148.2	+20

Contracts by type of work

	This Week	Cumulative 1949 (38 wks.)	1948 (39 wks.)	% chge av.wk
Waterworks.	$2.9	$159.8	$160.7	+2
Sewerage	4.2	194.9	166.6	+20
Bridges	3.3	247.7	212.6	+20
Highways	10.2	699.3	777.5	−8
Earthwork, Waterways.	6.6	427.3	386.1	+14
Buildings, Public	59.0	1,221.5	811.0	+55
Industrial	16.2	775.5	711.2	+12
Commercial	69.8	1,715.1	1,423.5	+24
Unclassified	16.4	566.2	499.0	+16

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1949 (38 wks.)	1948 (39 wks.)	% chge av.wk.
NON-FEDERAL	$4,276.2	$3,444.0	+27
Corporate Securities	1,793.4	1,545.3	+19
State and Municipal	2,097.8	1,406.4	+53
U. N. Building Loan	...	65.0	...
Federal-Aid Highway	385.0	427.3	−7
Federal	621.8	1,558.9	−59
Total Capital	$4,897.9	$5,002.9	0

House ok's omnibus bill

(*Continued from page 10*)

Among the river and harbor items, the largest calls for $70,000,000 for new work on the Arkansas River and its tributaries. This authorization would allow $35,000,000 to begin construction of the $69,000,000 Dardanelle dam and lock, a navigation-power project on the Arkansas, and $15,000,000 to start work on the Eufaula dam and hydro power development on the Canadian River. Eufaula is estimated to cost a total of $130,000,000. The remainder of the Arkansas River authorization would be for bank stabilization.

In addition, the Arkansas River Basin would get $15,000,000 under the flood control section of the bill to begin work on six dam projects already authorized, but not yet started. These projects are: Mannford, Toronto, Oologah, Neodesha, Elk City (Table Mound), and Markham Ferry. Total estimated cost of the six projects exceeds $145,000,000. Two of them—Markham Ferry and Oologah include hydro power installations.

The present bill calls for smaller total money authorization than either of its two comparable predecessors, both of which attempted to forecast five-year programs. The 1944 Flood Control Act and the 1945 River and Harbor Act, taken in combination, added up to more than $1.3 billion. Similarly, the 1946 Flood Control and River and Harbor Acts totaled nearly as much. As the House Public Works Committee pointed out, on the basis of the ENR construction cost index, those authorization bills, if enacted today, would have to provide totals of $2.08 billion and $1.76 billion respectively.

New specifications for hardwood floor finishes

New specifications covering finishes for hardwood floors have been issued for the Maple Flooring Manufacturers Association by Foster D. Snell, Inc., New York, consulting chemists and engineers, and the official association laboratory.

The 1949 specifications, which became official Sept. 1, amend and supersede those issued in 1946. They establish standards for finishes for both heavy duty and gymnasium floors and are designed to give users the benefit of technological improvements in the intervening years. Products found to meet these specifications when tested by the official laboratory are placed on the MFMA approved list issued by the association and can be advertised and sold as approved products.

Principal changes from previous specifications establish numerical values for several test properties previously left indefinite.

Copies of the specifications may be had from Foster D. Snell, Inc., 29 West 15th Street, New York 11, N. Y., or from the Maple Flooring Manufacturers Association, 46 Washington Boulevard, Oshkosh, Wis.

TOO MUCH WATER for the culvert cost Sioux City, Iowa, the use of its $600,000 Gordon Drive a month after dedication. Heavy rains boosted flow of Perry Creek which winds through heart of city, over capacity of culvert, washed out abutment.

N. Y. Port Authority to make Hudson crossing survey

Believing that within a few years the vehicular traffic across the Hudson River at New York City will tax the capacity of the George Washington Bridge, the Holland Tunnel, and the Lincoln Tunnel, as well as the ferries, the commissioners of The Port of New York Authority have authorized a regional interstate vehicular traffic survey as to the need for and the timing of construction of any possible additional trans-Hudson crossing.

The survey, to cost $35,000, will begin at once, to be completed in about a year. It is expected that a field staff of about 50 will conduct the first phase of the survey. Origin and destination questions will be asked at the toll booths of the Port Authority crossings and at the various ferries.

No comprehensive studies of the origins and destinations of traffic have been made by the authority since 1935. Such information is required to determine how much traffic would be attracted to a new crossing at any given location, and how much relief would be given to the present overburdened facilities.

Where does traffic go?

"For example," Chairman Howard S. Cullman said, "the Holland Tunnel carries more than 15,000,000 vehicles a year. But we do not know how much of this traffic goes south of 42nd Street in Manhattan and how much of it goes north of that midtown street. We have no information about the percentage of the traffic that moves to upper Manhattan, the Bronx, Westchester County and Connecticut. These latter areas, following the completion of Route 100 and Route 4 in New Jersey, might be better served by the George Washington Bridge or a new bridge north of the present facility. We have no accurate information on how much of the Holland Tunnel traffic, particularly on week ends, carries travelers between the New Jersey shore points and Brooklyn. Such traffic might be detoured across Staten Island after the construction of the Narrows Bridge. Of course, origin and destination information is also vital to a determination of the location of entrances and exits of any new crossing, both in New Jersey and New York."

RANDOM LINES . . .

. . . in which Madison County, Indiana, highway officials raffle a road and influence their constituents

There's an increased interest in road problems prevailing in Madison County, Indiana, these days. In part, at least, it's because county commissioners raffled a road.

It all started when the commissioners planned dedication ceremonies for their new $150,000 county highway garage. They were proud of their building and their road system. But they wanted some deeper perception on the public's part of the county's road problems and possibilities. The dedication seemed like an excellent chance to tell the county's road story.

But what was to be done for an audience? Ordinarily, prospects for attendance at such a function would be limited to a few officials and even fewer townspeople.

"Everybody" was there

As it was, between four and five thousand Madison County residents saw the new garage, inspected the equipment it houses and heard some part of the commissioners' story about roads. There are about 7,000 people in the county, excluding industrial Anderson, the county seat.

The road raffle was the answer—or a large part of it. Commissioners, with the legal blessing of the county attorney, announced that the township which had the largest number of persons—regardless of age— on hand at a specified hour of the dedication ceremonies would win a mile of blacktop road.

Any such raffle, of course, represented a departure from the orthodox method by which available materials are allocated—on the basis of road use and public demand.

Still, the interest it might provoke on the part of the public in their road system was attractive.

The mile of road, incidentally, was won by Adams township, which turned out 185 persons for the roll call. Anderson township was second. Eight of 14 townships had large delegations present. The winning mile, which will be laid down early next year, will connect U. S. Route 36 and state route 236 with an important road which passes a school and a number of fruit orchards. Adams isn't a rich township—it's largest town has only 350 people.

It was an afternoon-evening program, with the afternoon devoted to inspection of the equipment and the garage. Enough people were there to make it necessary that equipment be moved from the garage to where the crowd could get at it. And as time for the raffle approached, the crowd overflowed the premises.

77 cents—per mile per day

Commissioners got their story across that evening, primarily, when they presented Purdue University's Professor Ben Petty as speaker. Petty traced the evolution of road policy in the state since 1932; described relative construction and maintenance costs then and now; related the growth in registered vehicles and showed how the amount of money available for maintenance, as compared with the amount of road to be maintained, has changed. Today, he told the crowd, there is available "the insignificant sum of 77 cents per day available for each mile of road." **Sam R. Forkner, ENR's Correspondent.**

State seeks 50 engineers for priority road work

Fifty additional road engineers—to press a six-point emergency highway program and to offset the loss of 65 engineers to private firms—will be hired by Indiana's Highway Commission.

Highest priority, after a month-long survey of the waiting list, went to these projects:

1. A $1,000,000 railroad grade separation in Elkhart.
2. Widening of Western Avenue in South Bend.
3. A railroad grade separation on U. S. 27 in Richmond.
4. A new bridge over the White River at Martinsville.
5. Completion of Fort Wayne's circumurban highway.
6. Straightening, resurfacing and regrading of Indiana 10, between Argos and Indiana 43.

WSPE hits federal aid

Wisconsin Professional Engineers take a dim view of federal financing for advance planning of public works—dim enough for directors to put the society on record opposing it.

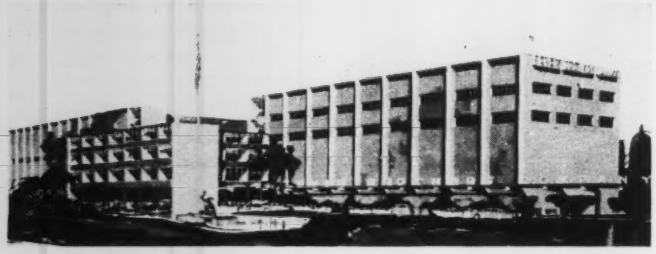
This action came at a directors' meeting, by a 5-4 vote. The resolution asserted that such federal aid "eliminates thoughtful consideration and engineering study of public works," and added that the "mere existence" of such funds "distracts from the need for engineering analysis."

Federal aid to local works planning "tends to centralize control in the hands of federal and state bureaus and thus jeopardize the public interest," WSPE's resolution declared, and such planning control is "contrary to the very basis upon which this country is founded."

Specifically, the resolution was aimed at S. 2116 and H.R. 5333, bills before Congress now which provide federal aid for advance planning.

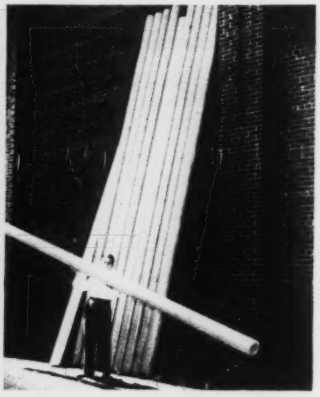
OK big Wisconsin program

Wisconsin has a new $25,445,000 institutional spending program in the law books—and the new taxes with which to pay for it. The building funds will be split between the department of welfare and various state schools and colleges. Of the total, $16,200,000 will come from a new cigarette tax and a 25 percent increase in personal income taxes. The remainder is available from unspent funds of the old post war program.



CONSTRUCTION OF A $25,000,000 SOAP AND FOOD PRODUCTS PLANT for Lever Bros. Co., is now well under way in Los Angeles. This artist's sketch shows the main buildings which will be located on a 30-acre site facing the new Santa Ana Freeway. Included in the project is a steam generating plant, cooling towers, a research laboratory, and a hydrogen plant. Much equipment will be outdoors.

CANADA'S LARGEST office building completed since the war's end is the Bank of Montreal, in Ontario. It was started before the war, opened early this month. Sixteen stories high, it is air conditioned throughout, and cost $5,400,000, used 1,700 tons of special alloy steel. Anglin-Norcross, Ltd., Ontario, was the contractor. Architects were Chapman, Oxley & Facey and Marani & Morris, Toronto.



POSSIBLE REPLACEMENT for steel in Army combat pipelines is this pipe of plastic-impregnated glass fiber. It weighs 40 lb. per 20-ft. section. Comparable steel pipe weighs 185 lb. It's undergoing tests at the Engineer Research and Development Laboratories, Fort Belvoir. Samples show burst pressures up to 2,500 psi. Impact values test more than 20 psi. Wall thickness is less than $\frac{1}{8}$ in.

NEWS BRIEFS

Oil Gone—One group which made no profit whatsoever from the discovery of an oil well on its property was the Maple Heights (Ohio) school board. It located an abandoned well after it had spent $80,000 on a new school building addition—directly over the well. A state order forced abandonment of construction. The building funds had been raised by a bond issue, and the board wonders now where it's going to get the additional money for the new addition, 25 ft. away from the first, for which plans are being drawn.

Ought to Be Popular—Six acres of parking space will be provided in a super shopping center which will be erected at Levittown, L. I., to serve 175,000 people within a 10-mi. radius. Lionel R. Bauman, Manhattan real estate man, and Samuel Leider, Forest Hills builder, will be owners and builders. The center will be located on a nine-acre tract, with three large store buildings, the first of which, containing 12 shops, is to be completed Nov. 1. It's to be one story high, 201 ft. long and 70 ft. deep. Designed and engineered by Schulman & Solway, architects and engineers, the front will be of glass and stainless steel, the remainder red brick. Ceilings will be 14 ft. high, and a five-ft. overhang will extend over the sidewalk atop 10-ft. windows. Customers: They'll come from the 7,000 homes Levitt & Sons already have erected in the area. Levitt has 1,200 more going up now and 1,800 more planned. Other builders have put up 1,200 more homes.

No Place for Politics—Members of Ohio's brand new Turnpike Commission have been directed by Gov. Frank Lausche to keep politics out of their roadbuilding. Lausche promised no interference from the governor, and asserted that he had attempted to banish any political implications from his choice of members. James W. Shocknessy, Columbus attorney and advisor to the governor, was named chairman. Other members: O. L. Teagarden, Oak Harbor banker, vice chairman; Highway Director T. J. Kauer, an ex-officio member; J. Gordon McKay, Cleveland; and Murray Seasongood, Cincinnati.

Taking No Chances – A cyclotron building now under construction at the University of Washington's Seattle campus probably will afford greater radiation protection than any similar building in the land, Prof. J. E. Henderson believes. The circular building will have 10-in. concrete walls which will be banked with earth 10 ft. thick. A two-ft. deep lake will cover the top of the building. The cyclotron's 25,000,000-volt beam will be divertible into a concrete-walled room 25x8x8 ft. The room can be filled with water, to dissipate the high-energy particles.

Authorities Prove Useful – Pennsylvania has gone in heavily for the authority device as a means of getting its public works job done. It's new Public School Building Authority has approved 26 projects, which will entail a $15,000,000 expenditure, so far. PSBA builds schools and leases them to local districts until they are paid for. It gets the money from state employe's and teachers' retirement funds on long-term notes. A General State Authority, operating on much the same pattern, is building institutional structures for the state.

Small Fry, Take Warning – Twelve new schools and additions to six others have been approved by the Baltimore County Commissioners. They'll cost $8,583,664, financed by a one-quarter grant from the state and a three-quarter loan from a credit pool established by this year's legislature.

Network-Flow Analysis Speeded By Modified Electrical Analogy

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Naval Ordnance Laboratory
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Commonwealth Edison Company
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A MODIFIED METHOD has been developed for analyzing flow in water-distribution systems by electrical analogy. This procedure requires only one transition from hydraulic to electrical units and takes into account combinations of fixed pressures and flows, variable pressures and flows and pressures that are functions of flows in inlets, outlets and branches of a pipe network.

Any method for simulating conditions of pressure and flow in a pipe network must satisfy not only the general equation for fluid flow in each pipe:

$$h = kQ^n \qquad (1)$$

where h = fluid pressure differential,
Q = quantity of fluid flow,
n = an empirical exponent, usually 2, and
k = a coefficient of resistance in the pipe determined by fluid properties and dimensions and roughness of the pipe:

but also two fundamental laws governing flow and pressure gradients in networks:

(a) Total flow reaching any junction in a network equals total flow leaving it; and

(b) Total change in pressure along any closed path is zero.

Previous development

Basic to a discussion of the new method is a review of previous work:

A mathematical method for the analysis of flow in networks is described by Hardy Cross (Analysis of Flow in Networks of Conduits or Conductors. Eng. Exp. Station, Univ. of Illinois, Bul. No. 286, Nov 13, 1936). Employing the equation of flow (1), this method in its more convenient form requires assumption of a distribution of flow in the network. Distribution of flow then is corrected by adjustment and successive mathematical approximation until a close balance of pressures in each closed path is obtained.

An expansion of the Freeman Method for the graphical analysis of flow in small networks of pipes has been worked out by W. E. Howland (Expansion of the Freeman Method for the Solution of Pipe Flow Problems, J. New England Water Works Assn. 48:408, 1934).

Another method for analysis of flow in electrical models is set forth by T. R. Camp and H. L. Hazen (Hydraulic Analysis of Water Distribution System by Means of An Electric Network Analyzer. J. N. E. W. W. A., 48:383., 1934). This analysis requires assumption of values of electrical resistance in branches of the network. With volts (E) proportional to pressure units and amperes (I) proportional to units of quantity of flow (Q), currents in network branches are measured and the calculated value of KQ^{n-1} is compared with values of resistance (R) for each branch. Differences in these values are reduced by successive adjustment of resistance and measurements of flow in each branch until close conformity is reached. For an electrical analogy in perfect balance,

$$E = IR = h = kQ^n = Q\,(kQ^{n-1}) \text{ and } I = Q \text{ so that } R = kQ^{n-1} \qquad (2)$$

The Hardy Cross and Camp and Hazen methods require assumption and subsequent asymptotic correction of the balance of the network. The labor required for such corrections is governed by network complexity, operator skill and desired accuracy.

FIG. 1. COMPLEX PIPE NETWORKS are analyzed for fluid flow by a variable resistor calculating desk (Westinghouse Electric Corp. photo).

Modified method by steps

Application of analysis of fluid flow in networks by modified electrical analogy is done in five steps:

(a) Set up a model network of interconnecting resistors and connect inlets and outlets with a source of potential through rheostats so that voltage and currents may be adjusted in each.

(b) Insert values of resistance (R_1) in each branch so that resistance is proportional to the coefficient of fluid resistance (k) in eq. (1). Where fluid pressures are predetermined, apply proportional fixed voltages and fixed currents proportional to Q^n to the network.

(c) Measure currents (I_1) (approximately equal to Q^n) throughout the network, and voltages at junctions, if desired.

(d) Calculate

$$R_2 = R_1\,(I_1)^{\frac{n-1}{n}}$$

for each branch and insert values of R_2 in the corresponding branches. Where fluid pressures are predetermined, apply proportional fixed voltages and fixed currents (I_2) proportional this time to the first power of Q.

(e) Measure currents (I_2) and voltages (E) throughout the network. These values are proportional

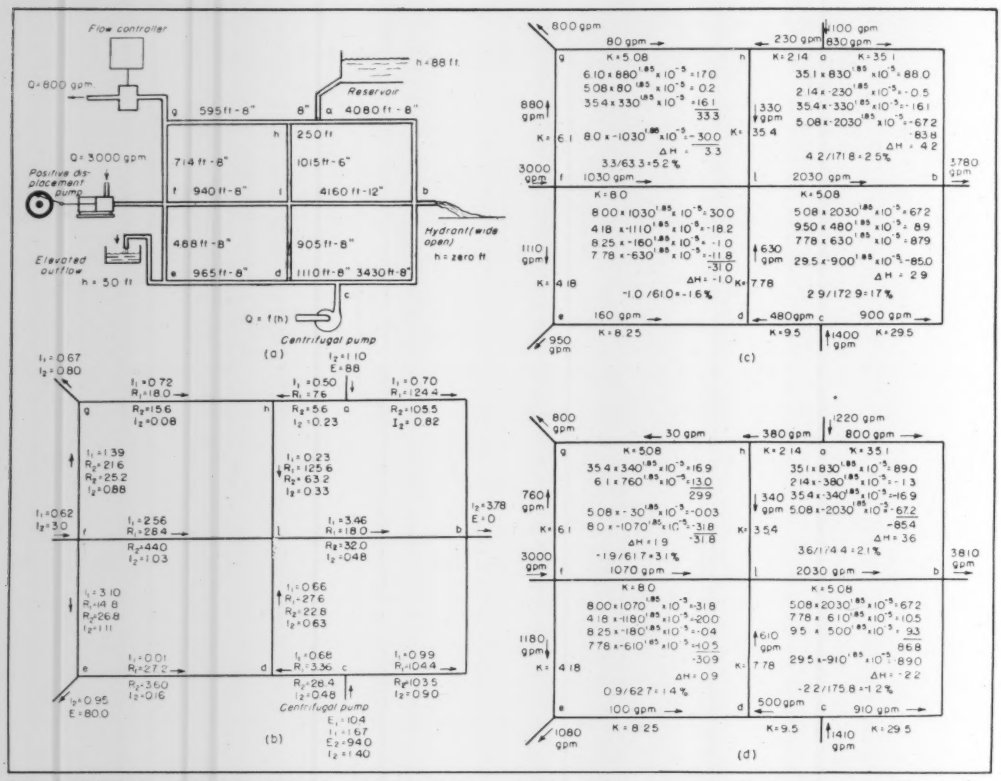


FIG. 2. STEPS in modified electrical-analogy analysis of a network of twelve pipes of various diameters and lengths with one positive outlet, two constant-head outlets, a positive and a variable input and a reservoir connection.

to desired quantities of flow and pressures in the fluid network.

Circuit relationships

In preparing for the electrical-hydraulic transition,

$$E = I_1R_1 = h = kQ^n \text{ so that } R_1 = k$$

$$\text{and } I_1 = Q^n \text{ or } Q = I_1^{\frac{1}{n}} \quad (3)$$

After the transition, it is necessary that

$$E = I_2R_2 = h = kQ^n = Q(kQ^{n-1})$$
$$\text{so that } I_2 = Q \text{ and } R_2 = kQ^{n-1} \quad (4)$$

Therefore, equating (3) and (4),

$$R_2 = R_1\left(I_1^{\frac{1}{n}}\right)^{n-1} = R_1\,(I_1)^{\frac{n-1}{n}} \quad (5)$$

It is seen that this relationship holds true for a single pipe or pipes in parallel connection for any value of n (where fluid pressure differentials are the same for each pipe). As a limiting case it also holds true for any network where n=1.

For a network of other than parallel pipes when the value of n is other than unity (turbulent flow), the interaction of non-linear flows in branches introduces deviations so that I_1 is not equal to Q^n in branches where fluid pressure differentials are not predetermined. The magnitude of these deviations in branches depends on the value of n and on remoteness of branches in the network from predetermined pressure points.

Since the value of I_1 containing a deviation from the correct value of Q^n is employed in the transition relationship as a root function, the value of which decreases as n increases as in Eq. (5), deviation in the final current I_2 from Q is much smaller than is the first current I_1 from Q^n.

Experience shows that deviations of I_2 from Q are less than five percent even in networks simulating 70-100 interconnecting pipes in which a large number of pipes are many times removed from predetermined pressure differentials.

A variable resistor calculating desk is employed for analyzing water distribution systems. The calculating desk resembles a telephone switchboard (Fig. 1). It consists of a large number of adjustable resistors with plugs and jacks for setting up a network as desired.

Inlet voltages and connections to ground may be applied through rheostats at desired points so that inlet or outlet currents and/or voltages may be adjusted to desired values.

Current in any adjustable resistor or rheostat can be read on an ammeter by throwing a switch. A portable voltmeter is used to measure voltage between junctions of resistors. Changes in the setup or in values of adjustable resistors may be made rapidly. A d.c. motor-generator set with a voltage regulator provides steady metered voltage.

Calculating desks of this type are used by public utilities and schools for solution of network problems in

transmission and distribution of electric power.

Analysis experiments

A network of twelve pipes of mixed sizes and lengths, as in Fig. 2(a), has one positive outlet, two outlets with constant heads, one positive input, a variable input and a short connection to an elevated reservoir of large size.

The network and connections are fictitious, but contain essential elements of a town-size water-distribution system containing 92 mains recently analyzed.

It is assumed that (1) pumps are on the same hydrostatic level; (2) hydrostatic heads are measured with respect to the centerline of pumps; and (3) frictional flow resistances in connections to the network are negligible.

It is further assumed that water flow in the pipes follows the equation

$$h = kQ^{1.85}\,(10^{-8}) \qquad (6)$$

where

h = friction loss, feet of water
Q = flow of water (gpm.)
k = coefficient of resistance per 1,000 ft. of pipe, depending on the nominal inside diameter as follows:

Nominal Inside Diameter—In.	k
4	246
6	34.1
8	8.4
10	2.8
12	1.2
14	0.55
16	0.29
18	0.16
20	0.10

Since n = 1.85 in Eq. (6), the value of n-1 = 0.85 and $\frac{n-1}{n} = 0.459$, rounded off to 0.46 for convenience. A nomograph for calculating values of RI^n is Fig. 3.

To analyze this network, an electrical model is constructed on the calculating desk as in Fig. 2b. Inlets and outlets are connected with the potential source through rheostats so that voltage and amperage can be adjusted in each. To fit limitations of the calculating desk, the following proportionalities were established:

one volt (E) = one foot of water pressure (h)
one ampere (I_2) = 1,000 gpm. (Q)
one ampere (I_1) = 1,000 gpm.$^{1.85}$ (Q^n)
one ohm (R_1) = 3.548k

Branch designations, pipe length in feet, pipe diameter, value of k for each length of pipe, and the steps toward completion of the analysis of flow in the network are given in Table I.

It is well to point out that, in preparing for electrical-hydraulic

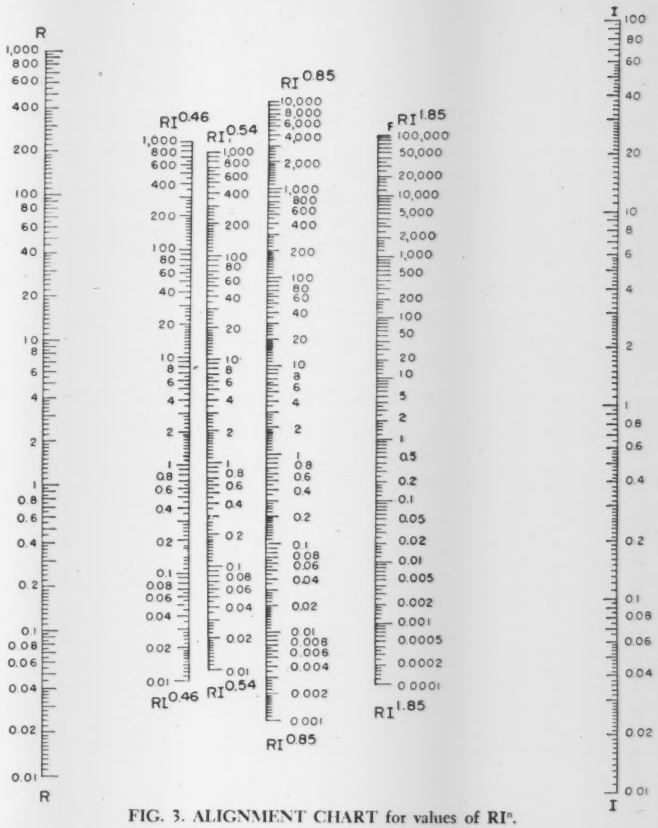


FIG. 3. ALIGNMENT CHART for values of RI^n.

Table I—STEPS TOWARD COMPLETION OF ANALYSIS OF FLOW IN NETWORK (FIG. 2)

Branch	Pipe Length feet	Pipe Dia. In.	k	R 3.55k	I	Volts obs	$I^{0.46}$	R_2	I_2	%	Volts obs	gpm
a-b	4080	8	35.1	124.4	0.70	88	0.85	105.5	0.83	15.0	88	830
b-c	3430	8	29.5	104.4	0.44	104	0.99	103.5	0.90	16.3	94	900
c-d	1110	8	9.50	33.6	0.68	24	0.84	28.4	0.48	8.7	15	480
d-e	965	8	8.25	29.2	0.01	0	0.12	3.6	0.16	2.9	1	160
e-f	488	8	4.18	14.8	3.70	55	1.82	26.8	1.11	20.1	30	1110
f-g	714	8	6.10	21.6	1.39	31	1.16	25.2	0.88	15.9	24	880
g-h	595	8	5.08	18.0	0.72	13	0.86	15.6	0.08	1.5	0	80
h-a	250	8	2.14	7.6	0.50	3	0.73	5.6	0.23	4.2	2	230
h-i	1015	6	35.4	125.6	0.23	29	0.51	63.2	0.33	6.0	22	330
b-i	4160	12	5.08	18.0	3.46	62	1.76	32.0	2.03	36.7	64	2030
d-i	905	8	7.78	27.6	0.66	18	0.83	22.8	0.63	11.4	15	630
f-i	940	8	8.00	28.4	2.56	73	1.54	44.0	1.03	18.7	46	1030
a(in)					0.22	88		1.10	1.10	19.9	88	1100
c(in)					1.67	104			1.40	25.3	94	1400
f(in)					7.62	135			3.00	54.3	110	3000
Total in					9.51				5.50	99.5		5500
b (out)					5.15	0			3.78	68.4	0	3780
e (out)					3.72	80			0.95	17.2	80	950
g (out)					0.67	104			0.80	14.5	86	800
Total out					9.54				5.53	100.1		5530
d						80					79	
h						91					86	
i						62					64	
Total Av.					9.525				5.515	100		5515

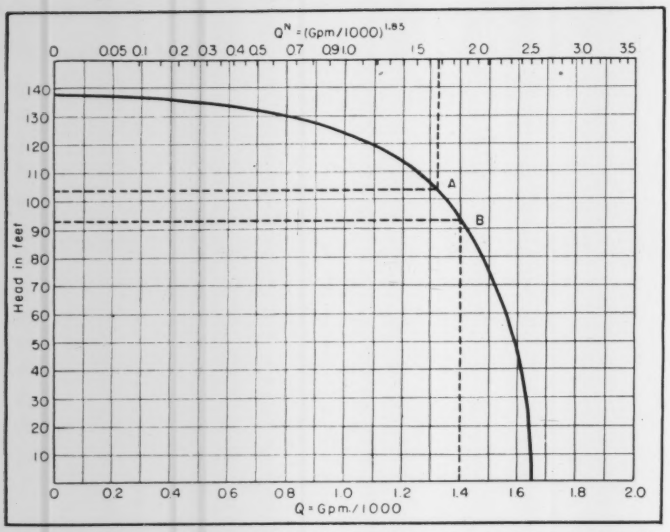


FIG. 4. HEAD-CAPACITY CURVE for centrifugal pump at input C (Fig. 2).

transition, rheostats in the external connections were varied until (1) voltages and currents in inlets and outlets coincide with desired values, and (2) voltage and current at the centrifugal pump simultaneously coincide on the pump head-capacity curve at point A (Fig. 4).

During transition, rheostats were varied until (1) voltages and currents in inlets and outlets again coincide with desired values and (2) they coincide at point B on the centrifugal pump head-capacity curve.

Current and resistances throughout the network, before and after the transition step, are shown in Fig. 2(b).

Evaluation of errors

Direction and magnitude of flows in the network are given in Fig. 2(c). The departure from zero of the sum of the changes in pressure along each of the four internal closed paths is calculated on the basis of eq.(6).

Head drops are excessive in clockwise directions when the sign of h is positive, and in the counterclockwise direction when the sign is negative.

Values of $R_1 I_2^{0.85}$ were calculated and are reported as R_3 in Table 2. Differences between R_2 and R_3 are also given.

To obtain greater accuracy, the balance was refined using a form of the Camp and Hazen method:

Calculated values for R_3 were set up in each branch. Adjusting inlets and outlets, resultant currents I_3 were measured and averaged with I_2. Values of $R_1 \frac{(I_2+I_3)^{0.85}}{2}$ were calculated and set up as R_4 in each branch of the network. Adjusting inlets and outlets, the resultant currents I were measured and values of $R_1 I_4^{0.85}$ or R_f were calculated. The steps in this refinement of balance are given in Table 2.

Direction and magnitude of network flows after refinement are shown in Fig. 2(d). Departures of sum of pressure changes from zero in the loops are again calculated from eq. (6). They are smaller than before.

Deviations between R_4 and R_f are given in Table 2. The maximum difference is 150 gpm. in branch h-a.

The effects of inserting an ammeter in a circuit, thereby altering circuit resistance, may be observed in deviations from equality of inflows to outflows at junctions. The maximum deviation in this respect is 40 gpm. at junction b.

Since magnitude of successive differences in branch currents due to refinement approached the limit of experimental accuracy of the calculating desk (demonstrated by junction inequalities), further refinement was considered unnecessary and I_4 may be construed to be equivalent to Q in evaluating accuracy of I_2.

Error in total flows through the network after transition, as compared to the refined balance, is 1.06 percent. Maximum error in any branch on a total-flow basis is 2.65 percent in branch h-a. Maximum error in any inlet or outlet on the same basis is 2.2 percent at inlet a.

Design of fluid networks

Electrical analogy may be employed in designing a network of pipes or ducts to perform a particular function. If configuration of pipes and locations of inlets and outlets are

Table II—STEPS IN REFINEMENT OF BALANCE

Branch	$*R_f$	$*R_3$	I_3	$*R_4$	I_4	$*R_2-R_3$	R_4-R_f	I_2-I_4
a-b	105.5	105.5	0.82	105.5	0.83	0	0	0
b-c	96.5	95.3	0.90	96.0	0.91	8.2	-0.5	0.01
c-d	18.6	18.0	0.48	18.0	0.50	10.4	-0.6	0.02
d-e	4.1	6.0	0.18	5.2	0.10	-2.4	1.1	0.06
e-f	17.0	16.0	1.24	16.8	1.18	10.8	-0.2	0.07
f-g	17.1	19.2	0.68	17.6	0.76	6.0	0.5	0.12
g-h	0.9	2.0	0.12	0.8	0.03	13.6	-0.1	0.11
h-a	3.3	2.0	0.49	3.2	0.38	3.6	-0.1	0.15
h-i	50.2	49.3	0.39	52.8	0.34	13.9	2.6	0.01
b-i	32.9	32.8	2.07	33.2	2.03	-0.8	0.3	—
d-i	17.8	18.8	0.58	18.0	0.61	4.0	0.2	0.02
f-i	30.0	29.2	1.09	29.6	1.07	14.8	-0.4	0.04
Junction								
a(in)			1.32		1.22			0.12
c(in)			1.40		1.41			0.01
f(in)			3.00		3.00			—
Total (in)			5.72		5.63			0.13
b(out)			3.80		3.81			0.03
e(out)			1.12		1.08			0.07
g(out)			0.80		0.80			—
Total (out)			5.72		5.69			0.16
Total, Average			5.72		5.66			0.14

$$*R_2 = R_1 I_1^{0.46},\ R_3 = R_1 I_2^{0.85},\ R_4 = R_1 \frac{I_2 + I_3}{2}^{0.85}$$

$$R_f = R_1 I_4^{0.85}$$

known, a model may be constructed. Electrical resistances may be inserted arbitrarily in branches and adjusted until pressures and flows in network branches, inlets and outlets are distributed as desired. The model is then operating exactly as the network is intended to function.

It is then possible to calculate value of the resistance coefficient to flow k from resistances inserted and currents flowing from (2). Required pipe or duct sizes may then be chosen with proper values of k, taking length into account.

The modified method for analysis of flow in complex pipe networks by electrical analogy is sufficiently accurate for practical applications and involves one transition step,

$$R_2 = R_1 I_1^{n-1}$$

for the solution of which a nomograph is provided.

The method provides means for solutions of flow problems in networks involving fixed and variable pressures and flows in its branches, inlets and outlets. Specific means are provided for cases where flow is a function of pressure, as for combinations of centrifugal pumps whose performance curves are known.

The method provides means for direct design of complex networks in terms of pipe or duct sizes when configuration and desired conditions of operation are known.

Simple electrical network facilities have been constructed by individuals and smaller concerns for power distribution studies. These usually employ rheostats throughout that are set by an ohmmeter, and are powered by batteries. Some have been constructed to fit in portable cases, a number of which may be joined together to form extremely large networks. It is believed that similar portable network units might suffice for fluid-network analyses, provided that meters with accuracy greater than the desired results are employed.

Gunite Pipe Proves Cheaper for Low-Pressure Service

C. R. Browning
Consulting Civil Engineer
Tustin, Orange Co., Calif.

Bids on a recent California job showed the cost of gunite pipe under the requirements of this contract is 47 percent that of precast concrete pipe.

The pipe involved is 3,432 ft. long, 60 in. dia. and designed for a hydrostatic loading of 23 ft. It supports an 8-ft. maximum backfill. Built for the Santa Ana Valley Irrigation Co., the line will replace an open canal. Construction of a four-lane divided freeway was the immediate reason for building the new pipe at this time. However, greater carrying capacity and reduced losses will result to the benefit of the irrigators.

The pipe is designed for construction in two steps: first the invert and then the arch. The undisturbed soil is excavated to a half-circle shape. Wire mesh is placed on this and covered with a 3-in. thickness of gunite. The invert actually extends 4 in. above the spring line of the pipe to key into the arch construction. Wire mesh extends even farther than this so it laps the arch wire mesh and assures continuity of tension resistance.

The arch of the pipe is widened at the springline on each side to form continuous footings. The portion of the invert that extends into the base of the arch forms an effective water seal.

Bids permitted an alternate of either the gunite pipe or precast concrete pipe with double rubber gasket joints. Low bid for gunite was $12.76 per foot and low bid for the precast pipe was $27 per foot.

Thus, it can be seen that the cost of the gunite pipe was only 47 percent of the cost of an equivalent precast line. However, it must be pointed out that the gunite pipe is considered suitable only for low-pressure service.

Construction procedure followed by the contractor involved shooting 150 ft. of the invert in the forenoon and 150 ft. of adjoining arch in the afternoon. The arch was shot each day on the section of invert shot the morning of the previous day. This schedule made it possible to make one equipment setup each day with a maximum of 200 ft. of gunite hose used.

The arch is formed directly on the invert with timber supporting metal quarter circle sheets with lapped joints at the ridge. No nails were used in the timbering except at the ridge. Thus, these forms could be easily stripped and moved forward.

Original specifications called for reinforcing of the 3-in. gunite shell with 2x6-in. eight-gage electric welded mesh. At the last minute the fabricator declined to make that mesh, so 4x4-in. six-gage mesh was substituted. This mesh was doubled where hydrostatic pressure is a factor.

Waterglass stabilizes sand

Loam soil was necessary to provide firm support for the pipe invert. But at one point where the pipe siphoned under a road, borings indicated 10½ ft. of sand above the required loam. However, the contractor stabilized the sand by spraying it with sodium silicate (waterglass). This formed a hard crust about 1 in. thick which withstood the abrasive effect of placing the mesh and the force of the gunite as it was applied. Besides raising the siphon so as to lower the head, considerable excavation was saved.

Because of the relatively thin shell of this line, it was built with no expansion joints—thin shells are less subject to cracking from differential expansion. However, the concrete was carefully cured.

The invert was sprinkled with water until covered by the arch (curing compound may have prevented good bond between arch and invert.) A curing compound was sprayed on the arch to protect it. Then, 48 hours after shooting, the trench was backfilled and flooded. Besides guaranteeing effective curing, this served to settle the backfill.

In bridging across a highway drainage structure, the pipe is supported on two bents with the maximum unsupported span being 17 ft. The invert for this span was designed as a beam by thickening it to 4 in. and adding thirteen ⅝-in. bars in the lower quarter. Corrugated metal (16 ga.) rolled to the proper radius and later removed served as invert forms.

Capacity of the new line with 9 ft. of head from intake to discharge is computed to be 132 cfs. (Kutter n = 0.013).

Contractor on the work was the California Gunite Co., Frank Freeman, manager. Excavation contractor was Mathews Excavating Co., Robert Peterson, superintendent. The work was done for the Santa Ana Valley Irrigation Co. with Loren Blakeley, consulting engineer, in charge of field surveys. Design of the pipe was prepared by the author who has made patent application on the gunite pipe described herein.

BIO-FILTRATION PLANTS, old (left) and new, treat sewage from the communities of Richland and North Richland, atom-plant cities near the Idaho-Oregon border.

The Richland Story—Part III Sewage and Garbage

L. L. Wise
Assistant Editor

DISPOSAL of municipal wastes—sewage and garbage—at atomic town Richland, Wash., is done by up-to-date, efficient methods. Sewage is treated in a new bio-filtration plant; garbage is collected in self-loading trucks and buried in a cut-and-cover refuse fill.

As with the town itself, described in Part I of this series (ENR Sept. 8, p. 16) its water system described in Part II (ENR Sept. 15, p. 42), and even the plutonium-producing facilities in the Hanford Works, the sewage treatment facilities were developed in two stages.

During the wartime construction at Richland, a small bio-filtration plant capable of handling domestic flow from a population of 12,000 was built. Located just above the confluence of the Columbia and Yakima rivers, this plant included two small primary clarifiers, a 97-ft. dia. bio-filter, and two secondary clarifiers. Digestion was accomplished in a single stage digester.

By the time the new sewage treatment plant went into operation in May, 1949, the existing plant was operating well above design capacity. Population of Richland at that time was over 20,000. The new plant is designed for a population of 38,000 so that with both plants operating, the total capacity becomes 50,000.

The new plant employs a dual recirculation system with 75 percent of the bio-filter effluent recirculated to the primary clarifier and 75 percent of the secondary clarifier effluent recirculated to the bio-filter. The object of such recirculation is to increase the bacteriological activity of the bio-filter by a higher and more continuous rate of feeding. It also will effect a greater B.O.D. reduction.

North Richland sewage treated too

The construction town of North Richland (maximum population 13,000), had an Imhoff tank unit for sewage treatment purposes. At about the time that the new Richland plant went into operation, the effluent from this North Richland plant was directed to the sewage treatment setup at Richland. The Imhoff tank has now been taken out of service and all raw sewage from the two communities is treated at the new plant.

The main connecting Richland and North Richland is 18-in., joining a 24-in. sewer that goes through Richland. A 30-in. force main finally carries the sewage to the treatment plant on the south end of the town.

Standard chlorinators are used, but all lines in the chlorination building are completely identified by a color scheme. These follow the accepted standard: A striped yellow and green pipe used for liquid chlorine and a yellow pipe for gaseous. Fresh water and sewage pipes are also colored.

Sludge drying facilities were provided for the original plant, but not used, since a contract was worked out with a local fertilizer company to take the sludge in liquid form, to be used for subsurface fertilization. Part of the sludge is still so used, the remainder being dried on 16 open air beds provided as a part of the new plant.

One problem at the Richland plant that is not usually of concern to sewage plant designers relates to tumbleweed. This wind-blown desert plant has on several occasions lodged in the clarifiers and partly fouled the sludge-collecting equipment. The only solution, aside from completely covering the open-air tanks, has been to fish the tumbleweed out by hand.

Favorable cost comparison

The cost of the new treatment facilities is said to be in the neighborhood of $900,000. This compares favorably with the method of sewage plant cost estimate proposed by C. J. Velz in ENGINEERING NEWS-RECORD, Oct. 14, 1948, p. 85.

Assuming bio-filtration to result in 80 percent B.O.D. reduction, and using 230 as the 1926 ENGINEERING NEWS-RECORD construction cost index for April, 1949, the Velz method indicates that a plant of this size should average $1,000,000. Thus, this Richland plant can be seen to be well in line with sewage plant developments in other sections of the country.

The Richland sewage treatment plant was designed by DeWitt C. Griffin and Associates, Seattle, Wash. Contractor was J. A. Terteling & Sons.

Cut-and-cover refuse fill

Garbage disposal at Richland was originally by burning on a dump located southwest of the town near an airport maintained for official use. Burning was stopped because it interfered with airport operations and because the prevailing winds are from the west and persistently blew smoke into the community.

Seagulls actually were responsible for the final removal of the garbage disposal area to its present location. Even though some 500 mi. inland, there are enough seagulls in the garbage dump vicinity so that they too

interfered with airport operations.

The cut-and-cover fill is now located 2½ mi. north of town. Here a dragline crane excavates a trench 15 to 18 ft. deep. Garbage is dumped near the edge of this trench and pushed into it in layers by a bulldozer. The layers are covered with dirt, and the trench is gradually filled in this manner. Compaction is obtained as the bull dozer is spreading and covering the refuse.

Garbage is collected from residences twice a week by use of eight trucks of the compacting type. Six of these trucks have 13-cu.yd. capacity, and two are 12-yd. Daily collections are made from the commercial district. A trash pickup is made in the residential area once a week to remove such things as grass cuttings, lumber, sod, tumbleweed and the like, that the load packing trucks cannot handle.

No separation of garbage other than into the general garbage and trash classifications is required. For this reason no salvage is attempted; it is contrary to the rulings of the Washington State Department of Public Health.

Many of the original homes in Richland are equipped with coal-burning furnaces. At times, unquenched coals deposited in garbage cans ignite the contents of a garbage collection truck. To combat this, sprinkler systems which can be connected to fire hydrants are mounted on the trucks.

GARBAGE DISPOSAL—Garbage is spread in layers, in a 15-ft. trench dug by a dragline crane. A bulldozer then covers the layers of refuse with earth.

The Chicago firm of Greeley & Hansen was retained recently to review the garbage collection system. They estimated that some 50 to 60 tons a day of mixed refuse is disposed of. A comparison was made as to the relative merits at Richland of fill-and-cover disposal, incineration, and garbage grinding with the product flushed into the sewer. Fill-and-cover disposal was endorsed in this report as being most suitable.

Sewage and garbage disposal is a function of the Richland community management as administered by the General Electric Co. Earl L. Richmond is manager of the community division. J. M. Heffner administers the public works department, and W. L. Straughen is in general charge of garbage disposal and H. N. Petty supervises sewage plant operation.

Design and Engineering Data—New Sewage Treatment Plant for Richland, Wash.

Treatment
Coarse screening, grit collection, comminution, primary sedimentation, bio-filtration, secondary sedimentation, effluent chlorination, two-stage sludge digestion, gas recovery for heating air, sludge drying.

Comminution
Two Chicago pump units.

Sewage Characteristics
Domestic wastes only. Suspended solids—0.17 lb. per capita per day. B.O.D.—0.17 lb. per capita per day.

Capacity
4.53-mgd. avg., 6.45-mgd. max., based on 38,000 population with 120-gal. per day per capita flow.

Bar Screens
¾-in. openings, hand cleaned.

Bio-filter
152-ft. diam. with 4.5-ft. average stone depth. B.O.D. loading—1.5 lb. per cu.yd. of rock. Dosing rate 27.5 mg. per acre per day. Dorr distributor.

Grit Collection
15x25 ft. chamber with endless chain type grit collection.

Pumps
Two 5,000-gpm. and two 2,600-gpm. pumps for recirculation and two 75-gpm. sludge pumps.

Sludge Digestion
Two 65-ft. dia., 23-ft. swd. units. Fixed dome on primary, floating gas-holder on secondary. Capacity is 4.32 cu.ft. per capita for design population (38,000).

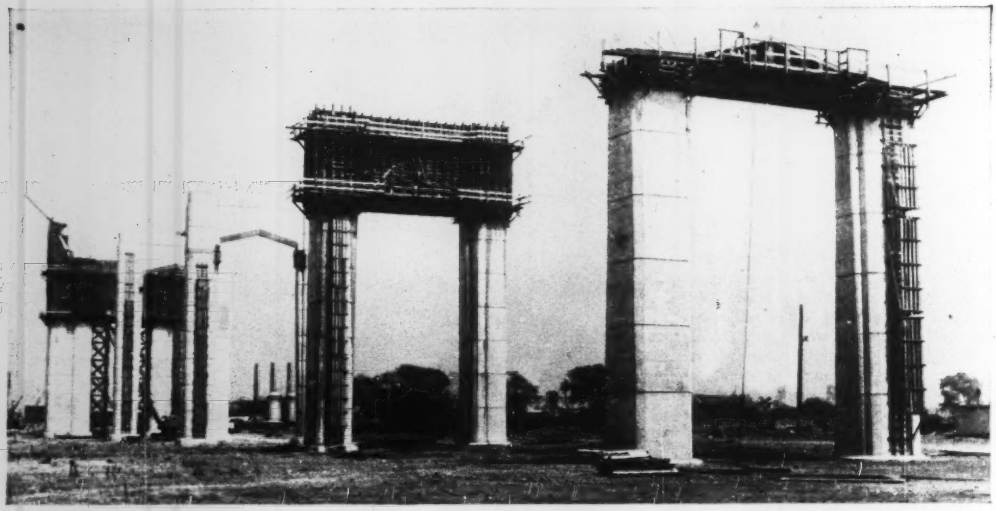
Cost
About $900,000.

Chlorination
Four 200-lb. per day units dosing to 2.5 ppm. residual. Contact time—20 min.

Boilers
Two 500,000 btu. per hr. boilers for digester heating.

Sludge drying
16 40x100-ft. open-air beds.

Clarifiers
Primary and secondary units both 115-ft. diam., 9-ft. swd., with Dorr sludge collecting units. Overflow rate for each is 770-gal. per sq. ft. per day. B.O.D. reduction in primary—30 percent.



PENROSE AVENUE CROSSING of Schuylkill River, Philadelphia, includes 54 approach piers. Note safety cages on ladders.

High-Level Bridge Replaces Swing Span

CONGESTION OF TRAFFIC between Philadelphia and Chester, Pa. will be eased when the high-level Penrose Ave. bridge is completed.

Crossing the Schuylkill River just above its confluence with the Delaware, the new bridge will reinstate an industrial route that has been out of service since 1947, when the nearby Penrose Ferry swing span was damaged by a ship.

So far, the substructures for both approaches and for the main bridge are under construction (the superstructure is under contract). Features of the substructure work are self-supporting approach-pier spandrel forms and open concrete caissons for main-span foundations. A large sewer, also part of the job, complicated the work at the east (Phila.) side of the river.

Overall substructure project length is 12,378 ft. Commencing at the east end, it includes: 1,300 ft. of earth approach, terminating in an abutment; 450 ft. of cellular construction; 26 approach viaduct piers spaced from 83 to 149 ft., the main span foundations (four) spaced 340-680-340 ft., for a cantilever bridge; 26 small viaducts and piers of spacing similar to those on the east side; 450 ft. of cellular construction; and 2,365 ft. more of earth approach. The western approach ties into an existing highway at a traffic circle. Approach-viaduct piers have a maximum height of 130 ft. The bridge will provide a navigable way 135 ft. above mean high water for a width of 340 ft. (under the cantilever's suspended section)

Bridge width is 61 ft., including two 24-ft. (two lane) roadways divided by a 3-ft. median strip, plus two 5-ft. sidewalks.

The sewer is a 7x9-ft. reinforced concrete box structure that runs for 3,742 ft. alongside the eastern bridge approach. It is part of a longer interceptor project that will drain the southern portion of Philadelphia.

Approach pier bents

All approach pier bents are founded on clusters of cast-in-place concrete piles whose penetrations vary from 24 ft. to 90 ft. Design loading on the east side of the river (where ground conditions vary widely) is 35 tons; and on the west side the loading is 45 tons. Pairs of reinforced concrete shafts rise from below-grade concrete pile caps to support a spandrel upon which superstructure steel will bear.

In the construction of the main shafts, plywood forms are set for the first 22-ft. lift, bearing on a low pedestal above the caps. A bevel at the top of each lift provides a ledge to support the forms for the succeeding lift. The approach piers were formed with plywood up to the springline of the spandrels.

The tricky part of approach-bent building comes just below the spandrel level. Here the contractor installed steel stubs upon which I-beam supports for spandrel forms are laid. Four of these stubs, two to a shaft, support two falsework beams. The stubs are 14-in. 78-lb. WF sections embedded horizontally 6 ft. into the concrete, behind a recess 6 in. deep. They project from the shaft face 24 in., and provide 576 sq.in. bearing for the 30-in. 108-lb. I-beams. The stubs' inner ends are tied down with 3-in. rod anchors, four to a stub.

The stubs are burned out and the recesses are filled with concrete after the spandrels are stripped. A safety feature of pier construction is a guard cage built around access ladders, an important measure in view of the fact that laborers, carpenters and lathers have a lot of climbing to do.

Spandrels on the main-span piers are much heavier than those of the approach piers. For these main-span piers two timber towers built up from the pile caps carry pairs of 30-in. 124-lb. I-beams. (Farthest pier in first photo).

Pier shaft and spandrel concrete is

placed by crane with a 2-yd. lay-down bucket that receives concrete from a transit-mix truck.

Spandrel side forms are stripped in seven days, and soffit support is removed in twice as many days as it takes a sample plain beam to attain 500 psi. flexural strength. Specified strength usually is reached in 7 days.

Caisson sinking

Caissons for the inner two main-span piers are of concrete, 39x85 ft. in plan, with 18 open-dredging wells 9-ft. in diameter. The cutting edge is a steel plate with a vertical exterior surface and a sloped interior surface, welded to a structural ring of split 14-in. 119-lb. WF sections with webs horizontal. The caisson is carried up 20 ft. at full plan size, then set back 12 in. It is set back again 33 ft. higher.

Sounding wells and blow jet holes are built into the caisson to aid in the sinking. Peripheral sounding well holes open on the inside slope of the cutting edge, 3 ft. above the edge. Interior holes open on the caisson's flat bottom, between dredging wells. There are two sounding well holes on each side of each dredging well.

Jet holes are placed on the outside (see square recesses, second photo) at the 11-ft. and 21-ft. levels above the cutting edge. They are fed by a 5-in. riser pipe to a header, from which 2-in. jets, tapering to 1 in., take off. The jets at the two levels are separately valved and are arranged to operate in quadrants at each level.

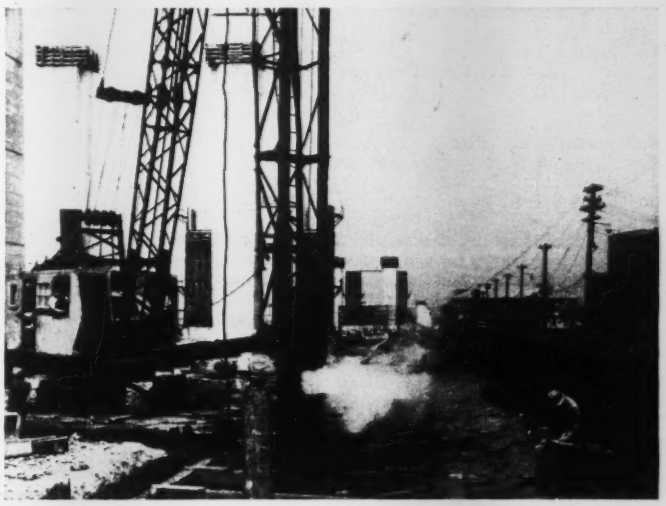
In construction and operation of the caisson, the cutting edge is set level within guide piles driven to clear the edge 6 in. all around. Steel outside and well forms are set, and the first lift is poured, 10 ft. 6 in. in height. Two more lifts of 4 ft. 9 in. are poured, making a total of 20 ft. and then muck is clamshelled out of the walls and, aided by the bottom jet, the caisson is sunk a short distance. Forms then are set for another lift of 4 ft. 9 in., for a repetition of the concreting and dredging phases. After the blow jets go below grade, they may be put into service, either as a unit to relieve friction all around or in quadrants to help correct differential settlement. Position tolerance is 12 in. horizontal and 18 in. (total) out of plumb.

Jetting is accomplished with a mixture of compressed air and water. Air is supplied by a 300-cfm. compressor and water is supplied by a 4-stage pump that delivers water at 180 psi. The maximum caisson depth, to firm sand and gravel, is 57 ft. below mlw.

The 7x9-ft. concrete box sewer is supported by timber piles driven to penetrations that vary from 40 to 92 ft. Pairs of the piles 5 ft. apart, on a 4-ft. longitudinal spacing, are driven after the trench is excavated, within steel sheet piling braced with timber.

The Penrose Avenue bridge substructure, sewer and appurtenances are being built for the highway department, Commonwealth of Pennsylvania, by Foley Bros., Inc., Pleasantville, N. Y. Daniel H. Young is project manager for the contractor, John A. Kilbourne is general superintendent, and James T. Allen is project engineer. J. B. Shallcross is district bridge engineer and Edward S. Wallace, junior district construction engineer, is in residence for the Commonwealth. Work began in March 1948 and will be finished next spring. Modjeski & Masters, Harrisburg, Pa., designed the bridge. Bethlehem Steel Co. has the superstructure contract.

CONCRETE CAISSON. Two Penrose Avenue bridge piers, at water's edge, are founded on open caissons. Note rectangular recesses for blow jets above the first setback (cutting edge is 20 ft. below setback). Steel forms set for next caisson lift.



SEWER CONSTRUCTION. Timber piles are driven in sheeted trench to support 7x9-ft. concrete box intercepting sewer alongside eastern approach to bridge. Sewer is included in substructure contract. Note pier shafts, background. (ENR staff photos.)

PHILIPPINE LABOR and modern equipment make a team that is efficient dollarwise.

Training Filipino Construction Workers Aids Job, and Country

E. S. Tillotson
General Manager, Drake-Utah-Grove
Manila, P. I.

BUILDING an effective construction force from unskilled Filipino laborers was an essential for completion of the building job itself in postwar Philippine defense work. And in terms of economic value to the new republic, the creation of a larger body of trained Filipino construction workers perhaps is even more important than the projects they were trained on.

Training, performed by a group of American contractors for the U. S. Corps of Engineers, took place in several parts of the island. The experience on permanent-base construction at Clark Field, Luzon, affords an excellent example.

Out of 30,000 unskilled Philippine nationals placed in training programs came 10,000 capable construction men. Considering their wages and productivity, these men turned out more work per dollar than the more skillful and better-paid Americans.

To appreciate the problem, a brief resume of the Clark Field work is necessary. Included were: 35 miles of concrete roads, 15 miles of asphaltic concrete roads; a large air strip; 45 miles of concrete-lined drainage ditches; 600 permanent residence units; a complete sewage collection and disposal system; water supply system with treatment plant; primary and secondary underground electrical distribution and telephone systems; two large diesel power plants; 37 large reinforced concrete barrack buildings two and three stories in height; four large mess halls; fifteen technical structures of reinforced concrete, structural steel and frame. Also included were storage and handling facilities for fuels and lubricants.

First approach to the labor problem was to recruit experienced and capable American supervisors, possessing the patience and ability to train and supervise Filipinos. About 14,000 Filipinos were required on the work during the peak of construction; about 350 Americans supervised.

These American supervisors took charge of both training the Filipinos and directing construction. Need for trained workers existed in two general categories—actual field construction and manning of production and maintenance shops.

The country surrounding Clark Field contained lumber, concrete aggregates and other products to be manufactured locally, and there were tremendous material and equipment stocks accumulated in Army depots. The stocks were both finished and unfinished, including spare parts and supplies of almost every conceivable nature. It was the Army's understandable desire to use these materials in the construction wherever utilization could be effected economically.

To accomplish this, craft and maintenance shops were set up, strategically located with reference to the job sites. Among the most important shops were the machine shop and shops for the repair and maintenance of automotive vehicles and construction equipment. All of these shops were modern, complete in all respects and equal to those usually found in the States. They were so arranged to facilitate the large training program to be instituted.

A number of compact manufacturing units, headed by Americans, were established. These were actually independent producers capable of supplying and servicing the basic construction needs for fabricated materials and manufactured specialties. The skilled top assistants required for production of these items came from the independent producing units and were available as required.

Shop-worker training

Supplying adequate personnel to man these shops required an extensive training program. In recruiting additional workers from the Filipinos, the superintendent and his assistants were faced with the initial difficulty of language barriers. This was partially solved by employing, after careful screening, competent native foremen who had some knowedge of English. These foremen are locally called "capataces" and many of them have a "following" of men, supposedly carpenters, machinists, electricians, plumbers, or iron workers; however, most of these "followers" are actually relatives, companions or ricepaddy workers. Few of the so-called mechanics carried their own hand tools, and when they did have tools they were mostly homemade and unsuitable for performing the work.

With this preliminary mobilization completed, the men were ready for instruction in the operation of various pieces of equipment, machine tools, crafts, and the use of American hand tools.

For the prospective truck drivers and heavy equipment operators, a school was started where lectures were given by competent Americans. After these oral instructions and lectures, the drivers were taken to driving ranges where their skill was tested, and operators were placed on bulldozers, cranes, shovels, draglines, hoisting equipment and many other types of construction equipment to complete their practical instruction. Simultaneously with this training program, the men were coached in

safety rules and regulations by lectures, pamphlets, and individual oral instruction.

Field construction training

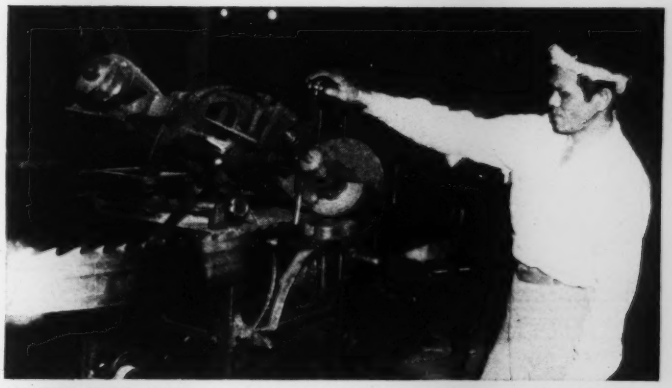
This system was not applicable in its entirety to workers employed on construction, which presented a slightly more complex problem: many more men were required for construction operations than for the shops and other supporting activities.

Construction superintendents followed the basic principle of initially employing skilled capataces. However, Filipinos having extensive experience on large building construction operations, utility work and heavy construction, were few and far between; therefore, in many cases young graduate engineers were employed as foremen because of their technical education. These capataces and engineers were first utilized to help select men who, after careful screening, were placed at work under the supervision and instruction of the Filipino and American superintendents.

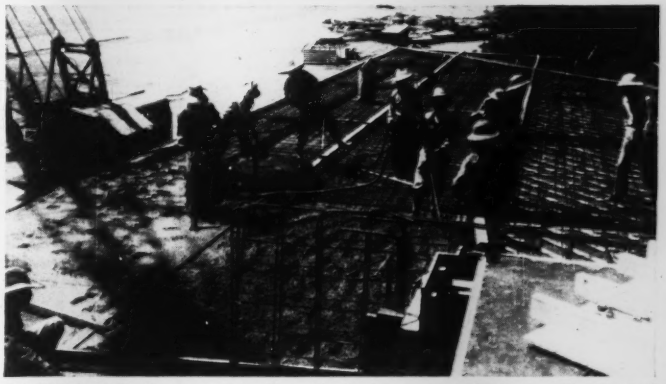
To obtain 10,000 construction workers required the screening, hiring and firing of 30,000 people. While this may seem like an excessive number, actually it was not. Many applicants for jobs were rejected for medical reasons, language barriers or lack of aptitude. Recruiting was carried on almost continuously over a two-year period as required by the construction schedule.

Statistical studies at the job site have indicated that the number of Filipino workers equal to an American worker ranged in ratios from 1 to 1 to as high as 7 to 1, with an overall average of about 4 to 1. Specific examples of these ratios indicate that machine operators, truck drivers, etc., after training was completed, compared favorably with Americans. But other trades utilizing carpenters, masons, cement finishers and iron workers, varied considerably—from a ratio of 2 to 1 as high as 4 to 1. Trades using plumbers, electricians and other special mechanics averaged 6 to 1.

Most administrative functions were performed by Filipinos, and it was found that they required more specific direction by Americans than field workers, but less training. It is estimated that their efficiency rating was about 3 to 1, compared to Americans. Technically educated employees, or others with professional education, compared more favorably with Americans and were utilized extensively in the engineering, accounting and other administrative divisions. Mess hall employees and camp help proved most efficient in the performance of their duties.



IN THE SHOP, Filipinos acquired useful skills in operating a variety of machines.



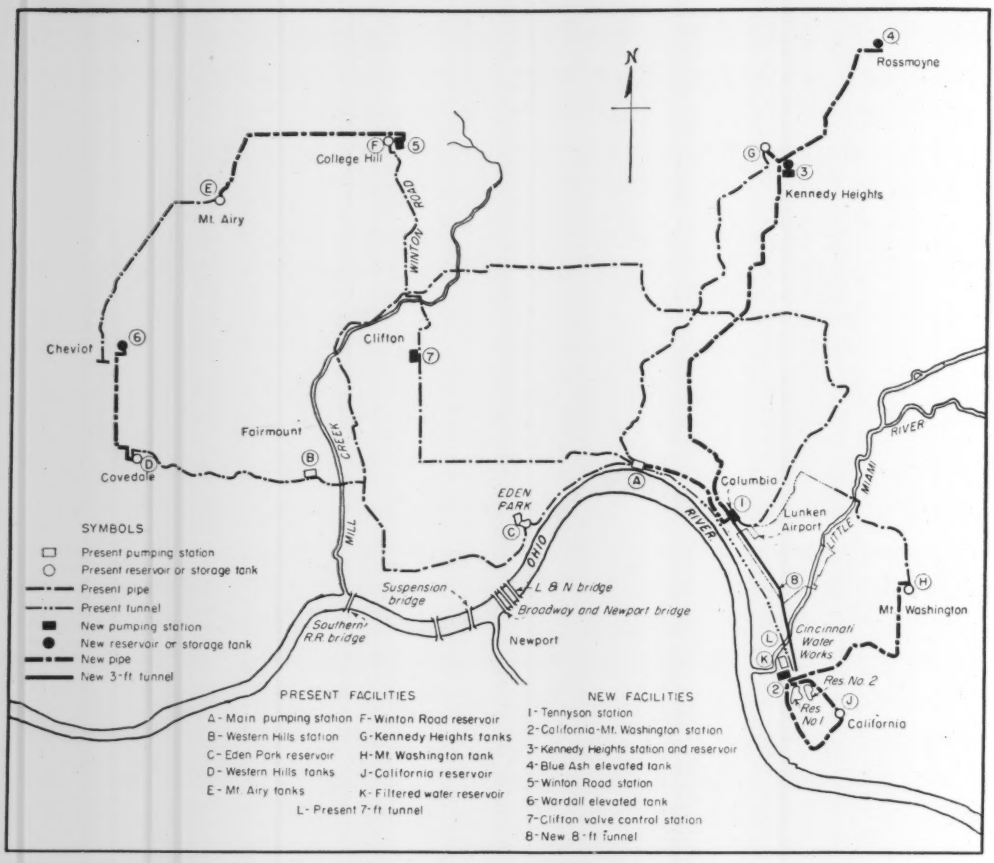
IN THE FIELD, they became familiar with vibrators, concrete buckets, reinforcing steel —most of the tools and materials previously known in the States.

Because of (1) the wide differential in hourly pay rates between the prevailing wage scales in the United States (West Coast) and those authorized and paid to the Filipinos employed on Department of Army work, and (2) considering the established efficiency ratios, the unit costs obtained on the work were comparable or below unit costs in the States during this period in most instances.

Statistics show that throughout the life of the job, one American could efficiently supervise forty properly-trained Filipino workers. Complete mobilization for the project, including the training program, consumed about six months of intensive work. While it may be said that the cost of the American overhead during this period was disproportionate to the results being accomplished in the field, eventually a great saving in labor costs resulted from the training.

As the work at Clark Field drew to a close, it was evident that the Filipino employees were and would continue to be in demand for other construction projects in the Islands. Local contractors, other contracting organizations and agencies, some as far away as Guam and Okinawa, are anxious to obtain these employees, particularly the Filipinos who have had specialized training. It is presumed that all of them will eventually be absorbed in local industries or other occupations requiring their newly learned trades, and these employees will continue to be a valuable asset to the economy of the new Philippine Republic.

The joint adventurers on this Corps of Engineers contract were Johnson, Drake & Piper, Inc., Minneapolis, Minn.; Utah Construction Co., San Francisco; and Grove, Shepherd, Wilson & Kruge, Inc., New York.



NEW TREATED-WATER TUNNEL, pumping stations, storage and distribution facilities are being integrated with Cincinnati's sprawling distribution system to increase and safeguard the city's water supply. Outlying areas will also get better water service.

Twice as Much Water for Cincinnati

R. E. Duhme
Asst. Supt. of Water Works
Cincinnati, Ohio

CINCINNATI, OHIO has plenty of raw water, and its water treatment plant will have adequate capacity for some years to come. Its distribution, pumpage and storage facilities, however are barely adequate to meet summer-time peak-hour loads.

To correct this deficiency, and insure an abundance of treated water by 1951 for both residential and industrial consumption, the city is pushing its multimillion-dollar water works expansion program. Construction activities are now approaching a peak.

The three-point expansion program, initiated in 1946, will more than double the quantity of water that can be delivered to the city. It will duplicate certain vital pumping and transmission features of the system. It also will supplement existing feeder mains in the distribution system to deliver additional water to outlying areas where residential growth and increased demands for water have been pronounced. And, finally, the expansion program includes additional storage facilities together with a more advantageous use of existing storage to minimize the peak pumpage rates during periods of extreme demands.

One major unit of the program now under construction, is the Tennyson pumping station—an electrified high-service station of 150-mgd. initial capacity and 200-mgd. ultimate. Also under construction (ENR Aug. 4, 1949, p. 32) is a 13,620-ft., concrete-lined 8-ft. finished diameter tunnel, designed to carry 200 mgd. It will connect Tennyson station with the present water treatment plant in the

southeastern part of the city.

In addition to these two major items, the over-all program includes several booster and control stations and storage facilities. Two new elevated steel tanks will have storage capacities of 2.5-mg. and 1-mg., respectively. Discharge mains from the new pumping stations, together with major distribution reinforcing mains, are being constructed or are about to be placed under contract at a cost of several million dollars.

The booster and control stations are designed for automatic or remote manual control through telemetering equipment. In addition to control, the resulting pressures, discharge rates, and reservoir levels will be transmitted and indicated on the control panels at the Tennyson station.

Takes water from the Ohio

Cincinnati obtains its water supply from the Ohio River. Both the source of supply and the treatment works are located upstream from the city, at the extreme easterly limits of the city, and above the mouth of the Little Miami River.

The original water supply and treatment works were constructed in the period 1900–05, with a rated capacity of 120-mgd. In 1934–36 the entire treatment works, except the settling reservoirs, were rebuilt around the old plant. Modernized equipment was installed and additional filters constructed, bringing the rated capacity of the plant up to 200-mgd.

The present expansion program includes no additional raw water supply or treatment facilities. Facilities for breakpoint chlorination, however, have been added as part of the water department's program to improve the quality of the water—particularly to eliminate objectionable tastes.

After filtration and chlorination, the water enters a 22-mg. clear water reservoir located at the site of the treatment works. This reservoir floats on the upstream end of a 7-ft. dia. gravity conduit that conveys the water about 4½ mi. to the main pumping station, which is operated by steam.

The pump suctions are direct-connected to a riser shaft from the gravity conduit which is constructed in rock about 150 ft. below the ground surface. A vertical shaft, extending from the ground surface through about 125 ft. of sand and gravel and thence about 50 ft. into rock, connects the clear water reservoir with the 7-ft. brick-lined conduit.

This conduit, paralleling the Ohio River and passing under the Little Miami River, is the only connection between the treatment works and the high-service pumping station. The conduit was constructed about 1900 and has been in constant operation ever since. It cannot be removed from service without interrupting the city's water supply. As shown on the accompanying map, the new 8-ft. tunnel roughly parallels the old 7-ft. conduit.

The existing main pumping station houses two groups of pumping equipment. One group delivers water at 80 psi. to the Central Service—the designation of the pressure plane of the distribution system serving the lower areas of the city including the river front, the principal commercial and downtown areas, and the large industrial developments in the Mill Creek valley.

The second group of pumps delivers water at 210 psi. to the Eastern Hills area of the city. The topography of the city is very rugged and the high pumping pressures are necessary to service the high ground areas. The area to the west of the Mill Creek valley, known as the Western Hills, is served under 240-psi. pressure by a booster station, taking suction from the Central Service distribution system on the west side of the valley.

Duplication of present facilities

All pumping units at the main station have been required during peak periods of the past several years. Even then, the reserve storage in the distribution system has been seriously depleted during such periods. Consequently, the duplication of tunnel and pumping capacities is needed in the event of a breakdown of existing facilities. The new tunnel and pumping station also will permit inspection and repairs to certain vital elements of the existing 50-year-old facilities.

Tennyson pumping station, located at Eastern Ave. and Tennyson St. will be of brick, steel and concrete 152 x 103 ft. It will contain a central pumproom with provisions for eight pumping units, six of which are to be initially installed. The building also will provide space for a garage over which a parking area will be available. General offices and shops will be located in a two-story portion in front of the pumproom. At the rear of the pumproom, in a single-story portion, will be the general employees' facilities, control room and a room housing all the electric switchgear, with the 13,200-kv. transformers located immediately outside and over the garage.

Six pumps in new station

All six electric-driven centrifugal pumps, each of 25-mgd. capacity, will be located in a 100 x 66-ft. by 35-ft. high pumproom at Tennyson pumping station. Provisions also will be made to add two 25-mgd. pumps in the future. Three of the pumps will serve the Eastern Hills area at 210 psi. They are two-stage horizontal type—two driven by 3,000-hp. synchronous motors and one by a 2,500-hp. variable speed motor. The three other pumps are single-stage, 75-psi, driven by 1,250-hp synchronous type-electric motors. They will pump into the Central Service. All six new pumps will be bottom-suction and discharge type.

All piping, valves and venturi meters in Tennyson pumping station will be located underneath the main operating floor in an open basement extending under the entire area of the building. Hand-operated travel-

DROP-TYPE CAISSONS will sink deep shafts at both the Tennyson pumping station and the water treatment plant, to connect with the new 8-ft. dia. tunnel.

135 FT. UNDERGROUND, two crews drive 80 ft. of tunnel per day. The 10-ft. bores have forced-air ventilation, explosion-proof lighting. (ENR staff photos)

ing cranes will be installed in each of the pipe galleries under the two story and single story structures adjacent to the pumproom.

All piping, including the venturi tubes, is to be of fabricated steel. Check valves and division valves will be cone type with the exception of some sectionalizing valves between the units which are of the gate type. Most of the cone operating valves are provided with oil-operated hydraulic cylinders.

The pumping units will be served by four 48-in. suction supply lines which converge into two 72-in. connections to the 10-ft. dia. riser shaft from the tunnel over which a steel surge tank is provided. The discharge headers are 48-in. size, one of which is to be dually used as a high and low pressure by a system of interlocked motor-driven cone valves.

The contracts for the Tennyson pumping station, with the amounts and names of contractors are given in the accompanying table.

Also included in the over-all project will be the construction of a 6-mg. treated water storage basin at the eastern terminus of the new tunnel, adjacent to the existing treatment plant. It will be in addition to the present 22-mg. covered storage reservoir located at the effluent from the filtration plant.

Three new booster stations

Also under construction are three booster stations for further pumping into the distribution system, described separately as follows:

Within the present filtration plant there is being installed one automatic pumping station which will comprise two services: One to supply the Mt. Washington area at 185 psi. through the use of 2 two-stage electric driven centrifugal pumps driven by 300-hp., 440-v. motors, and rated at 3 mgd. each. The other service will supply the lower eastern area of the Borough of California at 70-psi. through the use of two single-stage centrifugal pumps rated at 3 mgd. each and driven by 125-hp., 440-v. motors.

Located in the northern part of the Eastern Hills distribution there is being constructed a 6-mg. covered storage reservoir of reinforced concrete. It will be filled during off-peak periods to furnish suction to a booster station located at the reservoir site. This station will be equipped with two 5-mgd. centrifugal pumping units operating at 75 psi. and driven by 200-hp. electric motors. They will discharge into and supply an extensive and expanding residential area. The pumping units will be operated normally through telemetered control from either the new 1-mg. or 2.5-mg. elevated storage tanks located about 5 mi. away. They can also be operated through remote control from the new Tennyson pumping station.

To handle existing storage

A third booster station is being built in the Western Hills area of the city to take water from an existing 30-mg. open storage reservoir on the Eastern Hills Service and repumped into the Western Hills area through the use of two 5-mgd. centrifugal pumping units operating at 48 psi. and driven by 125-hp. motors.

A new 2.5-mg. elevated storage tank will be added to supplies available during peak periods to supplement the repumping now being performed by the large Western Hills pumping station. It also will introduce both pressure and volume of water in the extreme northerly parts of the Western Hills Service in a manner similar to that described above for the Eastern Hills Service.

Cincinnati's water expansion program is being carried out under the direct supervision of the author, reporting to C. Eberling, superintendent of water works. Black and Veatch, consulting engineers, prepared the design plans and are supervising construction of the new Tennyson pumping station, the new 8-ft. dia. tunnel, the booster stations, reservoirs and elevated storage tanks. All distribution piping and extensions are being installed under the supervision of the Distribution Division of the city's Department of Water Works.

TABLE OF CONTRACTS FOR TENNYSON PUMPING STATION

Item:	Company:	Amount:
Pumps	Worthington Pump & Machinery Corp	$265,440
Switchgear & Transformers	General Electric Co	142,600
Building	Frank Messer & Sons, Inc	744,950
Electrical Work	Bertke Electric Co., Inc	97,330
Heating, Air-conditioning	Peck-Hannaford & Briggs Co	32,290
Plumbing	B. A. Walterman Co	30,000
Mechanical Work	L. E. Stevens Co	313,810
Butterfly Valves	Henry Pratt Co	59,360
Benchboard Equipment	Bertke Electric Co., Inc	31,000
Valves	Chapman Valve Mfg. Co	86,310
Valves	S. Morgan Smith Co	116,090
Valves	Rensselaer Valve Co	12,590
	TOTAL	1,931,770

Claim U. S. Will Get Its Fresh Water from Ocean

Will the great metropolitan seaboard centers of the United States distill their domestic water from the ocean in future years?

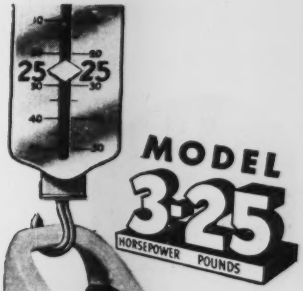
A growing number of far-seeing persons believe that this is more than just a possibility. Undersecretary of the Interior Oscar Chapman forecasts that fresh water from salt-water distillation will be used as additional water supplies in shortage areas by 1960. Writing in the USBR publication, *Reclamation Era*, Chapman reports on the progress of salt-water distillation research.

The process gained impetus from the Navy Department during the war and several companies in the United States are now manufacturing vapor compression distillation units. These vary in rated capacity from 60 to 4,000 gal. of pure distilled water per hour. The manufacturers estimate that the largest of these units have been improved to such an extent that operating costs might be as low as 55¢ to $1.50 per 1,000 gal., or from $180 to $490 per acre-foot. This, however, is still many times the cost of most municipal water and irrigation water supplied through Bureau projects.

Since the beginning of World War II, efficiency of the largest distillation units has been increased eight times. Because of this, the Department of the Interior believes that additional developmental research on a large scale is warranted. Their goal is to develop distillation plants with 500 times the capacity and 50 times the efficiency of the largest units being manufactured today.

Legislation which would facilitate development is now pending in Congress. It would authorize the Bureau of Reclamation to continue their research program and to construct, maintain and operate one or more demonstration plants to produce fresh water, suitable for municipal and irrigation uses, from sea water.

McCULLOCH *presents* THE SAWING SENSATION OF THE YEAR



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- ★ Kickproof automatic rewind starter
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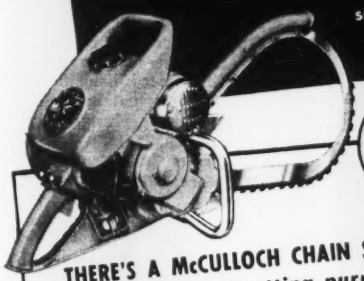
- ★ Floatless carburetor permits sawing in any position
- ★ Built-in chain oiler



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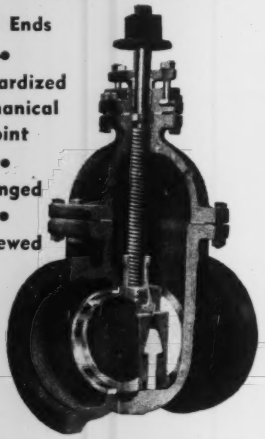

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Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phrases of Construction Contracts (McGraw-Hill)

Cost-Plus Contracts

"The rules of law controlling 'cost plus' contracts are well established. Upon reason and authority, where a person agrees to do work for another upon a cost plus basis, it is his duty to keep accurate and correct accounts of all materials used and labor performed, with the names of the materialmen and laborers, so that the owner may check on the same. He must use the same skill and ability as is used in contract work for a gross sum. If the aggregate cost upon the face of the account is so excessive or unreasonable as to suggest gross negligence or fraud, the law would impose upon the contractor the duty of establishing the bona fides of his performance of the work. The contractor does not have the right to expend any amount of money he may see fit upon the work, regardless of the propriety, necessity, or honesty of the expenditure, and then compel repayment by the other party, who has confided in his integrity, ability and industry.[1] In an action upon his contract for payment, the contractor must show that the moneys which he claims to have expended were necessarily paid for materials and work upon the job and if the contractor fails to do this he should only be allowed the reasonable cost and his percentage."[2]

The salary of the superintendent is a proper element of cost in a cost-plus contract.[3] However, when the superintendence is done by the contractor himself,[4] or by one of his partners, courts have refused to permit an allowance for the same as an element of the cost of the work.[5]

A contractor who agreed to perform work on the basis of cost plus 10 percent profit on all materials furnished by him and upon cost of work subcontracted by him to others who claimed the right to a flat surcharge rate of 50 cents per hour on labor on the ground that such surcharge was a fair and usual mark-up on wages, was held not to be entitled to the same, where the party for whom the work was being done had no knowledge of such practice. In this case the claim was made that this surcharge was made to cover insurance, social security, overhead and other costs in the cases of small builders who do not keep cost accountants. The court held that even in such cases, the burden was on the contractor to establish not only his charge, but also that it was reasonable.[6]

In this case, the court refused to admit testimony of witnesses who had submitted bids for the job stating the amounts for which they had offered to perform the work. There were changes in the work and a proper evaluation of the work must be made by competent witnesses who had examined the work as it had actually been completed.

(1) Hitt v. Smallwood, 147 Vd. 778, 133 S.E. 503, Title Guarantee & Trust Co. v. Pam, 155 N.Y.S. 333, affirmed 192 App. Div. 268, 182 N.Y.S. 824, affirmed 232 N.Y. 441, 134 N.E. 525.
(2) Shaw v. Build Cannon Shops, 38 So. 2d 916, (Supreme Court of Mississippi, Feb. 28, 1949, citing Pathe Laboratories, v. DuPont Film Mfg. Corporation, D.C., 3 F.R.D. 11.
(3) Meulenbergh v. Coe, 160 N.Y.S. 581. Winston v. Clark County Const. Co., 186 Ky. 743, S.W. 1027, 27 A.L.R. 49.
(4) Meulenbergh v. Coe, 160 N.Y.S. 581.
(5) Eggers v. Luster, 200 P. 2d 520 (Supreme Court of Washington, Dec. 10, 1948.)
(6) Piehl v. Marino et al., 36 N. W. 2d 695, (Supreme Court of Wisconsin, April 12 1949.)

Written Orders for Extra Work

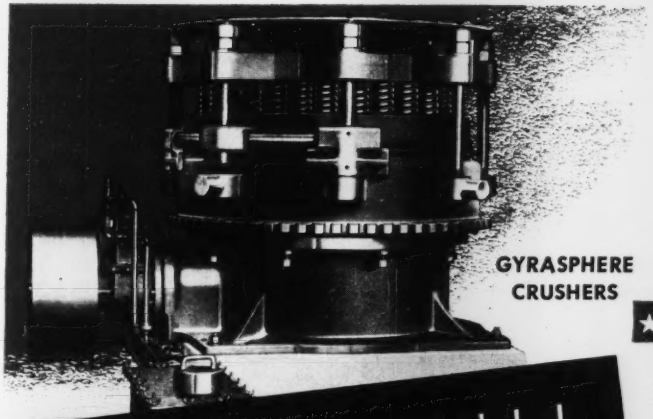
Where the contract provides that extra work will not be paid for unless ordered in writing, the owner cannot be held liable for such work in the absence of a waiver of the stipulation. However, the owner is liable for extras where it is shown that he permitted and authorized the changes, regardless of the fact that there was no compliance with the contract requirement of a written order from the person who was having the work done.[1]

In this case all the changes, additions and alterations involved were made with the knowledge and consent of the owner who was present at the site of the work every day. Under those circumstances the court held that the owner waived the contract requirement and should pay for the cost of labor and materials necessary to make changes, additions and alterations in the work.[1]

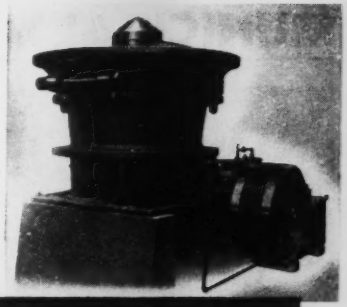
A provision in a subcontract that required written notice of changes as a basis for extra compensation did not deprive parties of power to modify contract without a writing. Such a provision will be deemed waived where the parties accepted and acted on oral notices.[2]

For other cases on this subject, see ENR, Sept. 16, 1948, p. 103.

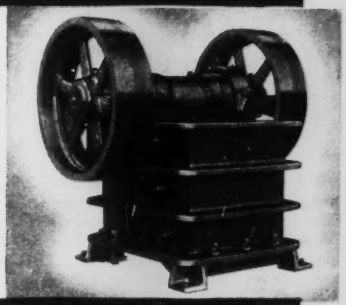
(1) Eggers v. Luster, 200 P. 2d 520 (Supreme Court of Washington, Dec. 10, 1948.)
(2) Continental Casualty Co. v. Schaeffer, 173 F. 2d 5 (United States Court of Appeals, Ninth Circuit, Feb. 11, 1949.)



GYRASPHERE CRUSHERS



TELSMITH CRUSHERS



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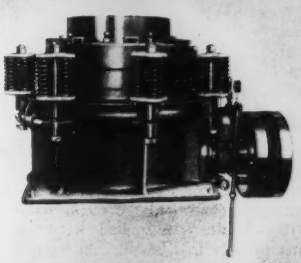

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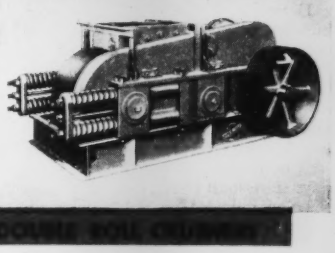

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Gyratory Breakers: Sizes 6-B to 25-B, 26 to 400 tons per hr.

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Gyrasphere: Sizes 24 to 48 in., 15 to 210 tons per hr. ***Intercone:*** Sizes 18 to 28 in., 26 to 68 tons per hr. ***Double Roll:*** Sizes 24 x 16 in. to 40 x 22 in., 75 to 132 tons per hr.

SMITH ENGINEERING WORKS, 500 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Address: Sengworks, Milwaukee

51 East 42nd St. New York 17, N.Y. • 211 W. Wacker Drive Chicago 6, Ill. • 713 Commercial Trust Bldg. Philadelphia 2, Pa. • 238 Main Street Cambridge 42, Mass. • Bosbck Eqpt. Co. Milwaukee 3, Wis. • Brandeis Machinery & Supply Co. Louisville 3, Ky.

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MUNICIPAL AFFAIRS

FREEWAY OPENING—C. H. Purcell, California director of public works, uses torch to cut chain for opening of the first section of East Shore Freeway in Oakland, Calif. The six-lane freeway eventually will run from Carquinez Bridge on the Sacramento River 36 miles southwest on the route to San Jose. The unit now open to traffic is part of a $17,000,000 section through Oakland. Offering encouragement to Purcell are civil officials and members of state highway commission.

Urban Highways

Federal aid authorizations for highway construction projects in urban areas for 1950 and 1951 now total $225,000,000, according to the American Public Works Association.

This program got under way when in 1944 Congress appropriated $125,000,000 yearly for three successive years. Cleveland, Ohio, got the jump on other major cities because it had drawn plans for a freeway system before the war and priority for different parts of the system had been set. First priority had been given a superhighway beginning one mile south of the city and running to the downtown district. This fall it will be open to traffic for a distance of 3.5 miles.

Detroit's $70,000,000 depressed highway is well under way, but will not be entirely completed until 1953.

Construction of expressways has begun in several Texas cities—San Antonio, Fort Worth and Houston. Dallas has built two miles of freeway through the city from north to south with no grade crossings. Parallel highways serve local traffic. A similar plan is being followed on a 1.3 miles expressway through San Antonio. Fort Worth is building two express highways at a cost of $4,000,000.

At Atlanta, Ga., the first leg of the superhighway system from Brookwood station on Peachtree Street to the downtown section will be completed in about a year at a cost of $4,000,000.

Salem Water Supply

A decree filed in circuit court at Salem, Ore., enjoining the city of Salem from diverting from the North Santiam River more than 22-cu.ft. of water per second, will, unless set aside on appeal, deprive the city of virtually half its water supply during extreme low water periods.

The decree also enjoins the city from diverting at any time for municipal use any water whatsoever through its intake valve on Stayton Island or through any other direct diversion facilities at any time when doing so would leave insufficient water in the stream to supply adjudicated prior need of the plaintiff in the action, Gardner Bennett.

Prior rights of Bennett, 8.12-ft. per second, are derived from rights dated back to 1866. These rights, the court held, are superior to any rights of the city of Salem for municipal use directly from the running stream of the river.

The court's order directs the water master to assume control of division of waters of the stream, after Oct. 1, 1949, by "adjusting, setting or closing" all headgates, valves and other diversion works as may be necessary, and divide and regulate the stream in accordance with various priorities. He is directed to continue such division as long as the deficiency in the stream continues.

The only period of the year affected by the decree will be late summer. Whether an appeal will be taken has not been decided by the Salem city authorities.

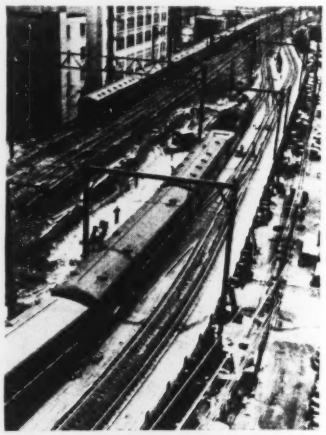
Traffic Control Plan

After months of controversy, the Salem, Ore., city council has adopted the Baldock plan of street and traffic control for Oregon's capital city.

The plan, designed by State Highway Engineer R. H. Baldock, will cost an estimated $7,600,000. It includes construction of a new bridge across the Willamette, widening of the present bridge, construction of a by-pass east of the city for through traffic, and a one-way grid system within the city, involving considerable street widening.

Favorable action was taken despite a communication from the State Capitol Planning Commission requesting a delay until the commission could make a recommendation concerning the effect of the plan on the capitol area of the city.

The first step to be taken by the state highway department in development of the plan will be surveys on the grid system and new bridge construction. These surveys will require several months. Surveys for the grid system will include descriptions of the necessary rights-of-way. The by-pass will be established as soon as it can be fitted into the state highway program.



NEW BRIDGE FOR OLD, with no disruption of the 520 trains daily which use it, is the record of this project in downtown Philadelphia. A two-track trestle on Vine Street allows demolition work to start on old span. This $1,613,804 project of the Reading Railroad is part of the job of widening Vine Street from 26 to 157 ft.

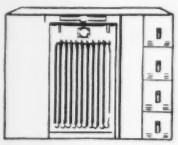
NEW GE CONTROL CENTER

...grows with your load!

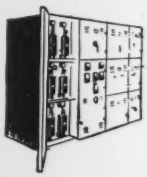
Standardized, self-enclosed starter units make building-on easy—As your system expands, these new motor-starting units can be replaced easily with larger ones because widths are uniform, heights proportionate. Complete new sections can be added alongside, or backed-up to, existing sections. Front-connected wiring and snap-on contacts make installation and servicing easy.

Development of this control center is yet another proof that General Electric keeps abreast of commercial-building needs with complete electric equipment for elevator, pump and blower drives—power distribution and conversion purposes. Your nearest G-E sales office will have an application engineer help you plan your entire system. Also, write for Bulletin GEA-4979, "New G-E Motor Control Center." ***Apparatus Dept., General Electric Co., Schenectady, N. Y.***

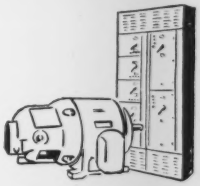
GE EQUIPMENT FOR COMMERCIAL BUILDING



Power-distribution Systems



Rectifiers for Power Conversion



Motors and Control

GENERAL ELECTRIC

Going down to stay!

THEY'RE KOPPERS PRESSURE-CREOSOTED PILES

● Never underestimate the damage that marine borers can do to untreated wood in salt water. In three to six months, they'll sometimes *honey-comb* untreated piles. In one year, they caused $3,000,000 worth of damage in a single American harbor.

The 76-foot piles pictured below have been pressure-creosoted by Koppers. This treatment protects piles against marine borers *and* decay—the two greatest threats to useful service life. Thirty years from now, based on case histories of similar installations, these Koppers Pressure-Creosoted Piles will *still* be sound and serviceable.

For piers, wharves, groins, jetties, breakwaters—in fact, wherever water and construction meet—get the protection that Koppers Pressure-Creosoting Treatment provides. Koppers Treating Plants deliver pressure-creosoted piles on schedule . . . sizes up to 130 feet are available. Quotations gladly furnished.

KOPPERS COMPANY, INC.
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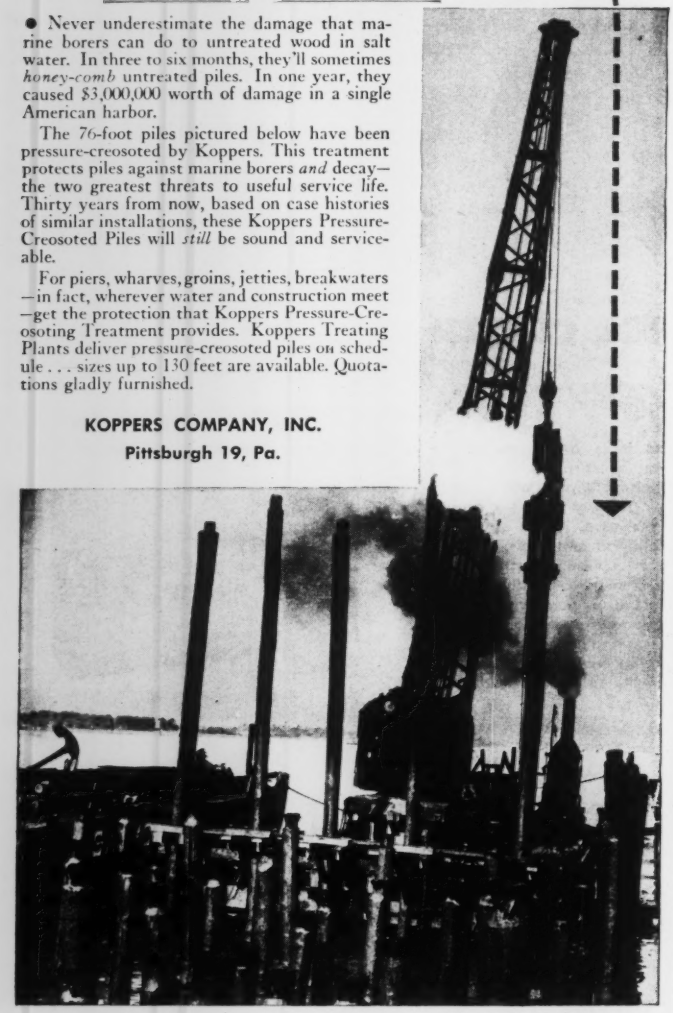


Foundation piles being driven for the 150-foot extension of the U. S. Coast Guard pier at Charleston, S. C.

KOPPERS PRESSURE-TREATED WOOD

Richmond's sea channel

Army Engineers will hold an "economic justification" hearing Sept. 29 on the deepening of Richmond's channel to the sea.

Acting Public Works Director James Bolton, who announced the hearing, said he is preparing to notify some 300 users and potential users of the water facilities and will assign a member of his staff full time to assist in gathering the necessary data.

The sea channel is now 25 ft. deep. It has been proposed to deepen the channel to 35 ft. to accommodate the heavier draft freighters that have replaced light draft vessels sunk during the war.

The economic justification hearing is the first step in a survey authorized by the Public Works Committee of the House of Representatives to find out whether the channel should be deepened.

Milwaukee Housing

The Builders Association of Milwaukee, Wis., has demanded a referdum on public housing as a prelude to any start on the city's contemplated multi-million-dollar low rent housing program.

In a letter to the common council, the builder demanded that the aldermen call for a public vote on the question at the next general election. The builders also demanded that the council give to the voters "full facts and figures as to the possible cost in taxes" of the program outlined by the Milwaukee housing authority.

The authority has recommended a six year program calling for erection of 6,750 low rent housing units, to be financed by federal funds to be authorized under the 1949 federal housing act. Only recently, the authority directed its executive director to apply to the federal government for financial aids to be used in building 2,500 units in the first two year portion of the overall program.

Municipal Briefs

A complete revamping of the water and sewer services in Greater Ottawa, Ont., at a cost of millions of dollars has been recommended in a report prepared by Gore and Storrie of Toronto. The report has been under study by the advisory committee of the Ottawa Planning Area Board for some weeks. The Federal District Commission is paying part of the cost of the preliminary engineering report. Ottawa would have to pay most of the cost of sewer and water extension, but other communities which would share in the work include East-

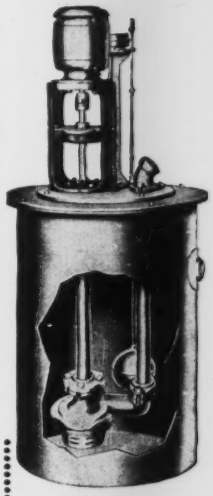
MORE CLEAR SIDEWALKS, via heated pavement, will greet Bostonians this winter as they pass the new John Hancock building. Wrought iron pipe is being installed in 720 ft. of wide pavement, one of the largest such systems ever installed.

view, Nepean, Gloucester and Rockcliffe.

More stringent regulations against soot will be placed on factory owners in Wilmington, Del., by a proposed amended smoke and soot ordinance. Under the new features of the law the fire marshal would use a measurement of the density of smoke as provided in a scale of the U. S. Bureau of Mines.

Just Another Dam Record—Rock aggregate for the Harlan County Dam, Nebraska, is cooled by an air conditioning unit large enough to cool a building a block square and 10 stories high. The air is blown through insulated tubes three ft. in diameter.

BOUNCING BOYS AND GIRLS will be commonplace on this playground, which Goodyear Tire and Rubber Co. has surfaced with ground rubber. At Akron's Rankin school, the new play area will furnish a test of an application similar to rubber-coated highways (ENR July 7, p. 52). The base is crushed stone, sealed with a "hot-mix" asphalt. Over this goes half an inch of ground rubber, rolled thoroughly to impregnate the particles into the asphalt. Unlike highways, it's a non-abrasive surface.



for simple design, sturdy construction

YEOMANS DRAINAGE PUMPS

are the choice of
EXPERIENCED ENGINEERS

Every installation of a Yeomans Drainage Pump builds prestige and reputation for the architect-engineer who specified it.

There are two types of pump

- **Yeomans Bilge Pump—Heavy Duty for handling drainage and wastes containing no solids**
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Each is a leader—an effective guarantee of long and dependable service. A full range of capacities from 10 to 5000 gpm, and heads to 75 feet.

For full information refer to Sweet's Architectural and Engineering Files. Also, these bulletins contain complete selection and installation data; you'll find them exceedingly helpful—write for them on business letterhead:

Yeomans Heavy Duty Bilge Pump
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Yeomans Screenless Ejector
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YEOMANS

An Ad About An Ad

Maybe you saw it! . . .

An ad called, "The Fastest Man What Ever Ran" . . . it appeared in some of the big magazines last year.

Maybe you said, "Bosh! . . . Bet they don't settle claims *that fast!* Why, that's the tallest tale I ever heard!"

Well, I wouldn't blame you . . .

But here's what happened the very day that ad appeared on the newsstands.

One of our policyholders, a large trucking concern, had an accident on the open highway.

8 minutes later the local Mr. Friendly was on the scene . . .

And in less than 30 minutes the entire case was settled to the satisfaction of everyone!

I've said in some ads that we save businessmen mountains of money, thanks to our special Engineering Construction Service . . . which helps reduce accidents and premiums . . .

Well, sir, we can show you dozens of instances where we've helped reduce premiums for contractors (as much as 53%

AMERICAN MUTUAL...*the first American liability insurance company*

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About Me! by Mr. Friendly

below average rate for the field in some cases).

When I talk friendly service in millions of magazine ads... every American Mutual man tries to give you the same friendly service!

With 77 offices in major cities, they can do it too!

The point is . . . Why not give your local Mr. Friendly a ring. See if he isn't as friendly and helpful as we claim he is!

See if he can't save you *more money*, through dividends and extra service.

And see how close our tall tales really are to down-to-earth reality!

MAIL THIS COUPON NOW—WITHOUT DELAY!

Dept. O-84, American Mutual Liability Insurance Company
142 Berkeley Street, Boston 16, Massachusetts

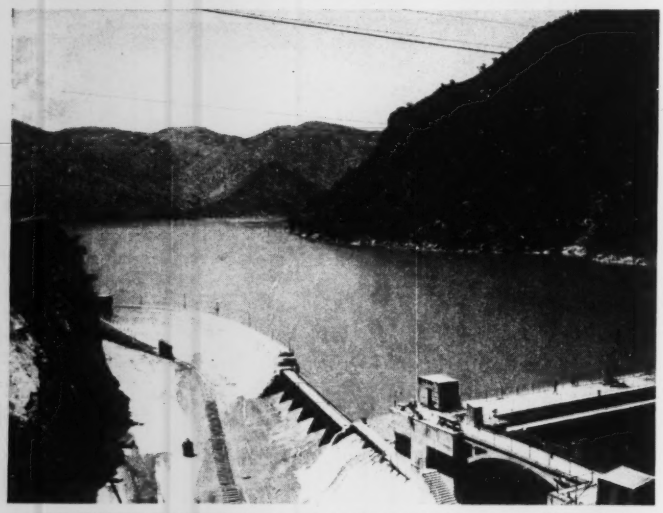
Without obligation, please *rush* to me more information on the All-American Plan so that I may be richer and happier!

*Name*_____

*Street*_____

*City*_____ *State*_____

DEVELOPMENTS ABROAD



A KEY WATER PROJECT in Australia is Burrinjuck Dam, on the Murrumbidgee River in New South Wales. It serves irrigation, powers two 10,000 kw. plants.

Harbor Facilities

Venezuela—Twenty-five years after constructing the original port facilities, the Raymond Concrete Pile Co., of New York, has returned to Maracaibo, to expand harbor works of that oil-rich port at the mouth of Lake Maracaibo. This is a federal project under the direction of the Ministry of Public Works. It will cost $3,000,000. It was begun in April, 1948, and must be completed by October, 1949.

Raymond project manager Arthur Fertell, who is employing 18 foreign technicians and 200 Venezuelans, says the port will accommodate ocean-going vessels carrying principally manufactured goods. Also, it will receive small native dugouts and other craft.

Improvements consist of the construction of a concrete sheetpile bulkhead, parallel to the existing laid-up seawall along Calle Marina and about 95 ft. south. The area between, which is 1,800 ft. long, is to be filled and paved, thus providing a much needed area for open storage and traffic.

About 1,000 sheetpiles will be required, each 16 x 24 in. in lengths of 30 to 40 ft. Tops of the sheetpiles will be tied back to wood-pile anchors by reinforced concrete tie beams between the cap beams on the sheet piles and the concrete anchor beams capping the wood batter piles. There will be approximately 1,000 of these wood piles. A new pier is being built with a concrete deck supported on reinforced concrete piles and a creosoted timber fender system.

Another important feature of the improvement is the dredging of the harbor to a depth of 20 ft. to facilitate the entry of more and larger vessels. About 500,000 cu. yd. of soft materials will be removed by dredging, besides about 25,000 cu. yd. of underwater rock excavation.

Sports Stadia

India—The semi-official National Sports Club of India has approved plans for construction of two all-purpose sports stadia, one in Delhi, to be named for Prime Minister Nehru, and one in Bombay to be named after Party Boss Patel. Each stadium will cost $750,000 and will include facilities for track and field sports, soccer, field hockey, cycling, tennis and swimming. An architect is being sent to Europe to consult on plans.

Housing Progress

Great Britain—When the war ended there were urgent calls in Britain for industrial building and reconstruction, and 750,000 bomb-damaged homes had to be repaired. There have been great shortages of brick, timber, steel, fittings, and other materials.

Despite these drawbacks, the work of providing the needed shelter has gone steadily forward and, according to the British Information Services, in the four years to the end of last June, about 1,000,000 new houses, apartments and other forms of family accommodation had been built.

Of these million homes, 527,000 were new permanent type houses and apartments, while 157,000 were temporary prefabricated bungalows. In addition, 140,000 unoccupied war-damaged dwellings had been repaired. Conversion of large houses provided a further 119,000 apartments and smaller family units. Requisitioning of empty properties gave another 29,000 homes, and the temporary use of empty Service camps and temporary huts added a final 28,000.

The development of more than 30 types of "non-traditional" houses, made wholly or partially in factories, or by new methods, has accounted for more than 120,000 new permanent homes. About 15,000 were made of aluminum, and about 30,000 of steel.

Not including accommodation provided in Service camps and similar places, between April, 1945, and June, 1949, some 975,000 families had been rehoused, a considerable proportion of Britain's 49,000,000 population.

Venezuela—The government has appropriated $11,400,000 for a housing project on the Hacienda Coche in Caracas, covering construction of 1,500 houses, parks, a school and an athletic field. Similar projects are planned for six other cities.

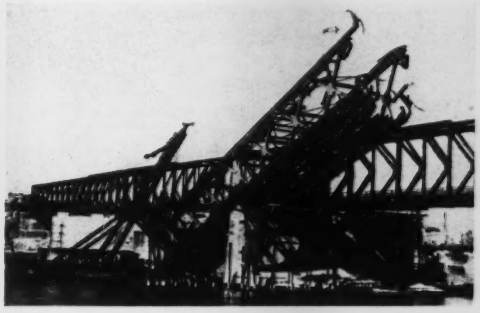
Italy—A seven-year housing program, with a total cost of 360 billion lire, will be undertaken by the Italian Government, it was announced by the Economic Cooperation Administration in Washington and Rome recently. The plan calls for the construction of 903,000 rooms, or 180,590 apartments, and will be financed by compulsory contributions from certain categories of Italian workers and employers, plus certain state contributions.

Fifteen billion lire (about $26,000,000) from Italy's counterpart fund (foreign currency equivalents of ECA goods and services grants to participating countries) will help finance the first year's expenditures. Half of the houses will be assigned for rental, and the other half on a "promise of sale" basis, with provision for the amortization of the total cost of the houses in monthly installments in a 25-year period. The program will provide jobs for thousands of unemployed.

The housing plan was proposed by Minister of Labor Amintore Fanfani and was adopted by the Italian government last February.

THREE OF FIVE SPANS of this deck arch highway bridge across the Rhine between Mainz and Kastel were wrecked, are being replaced by duplicates. Here, a half span is erected by a 200-ton floating crane. Two spans are 320 ft. long, the other 334 ft.

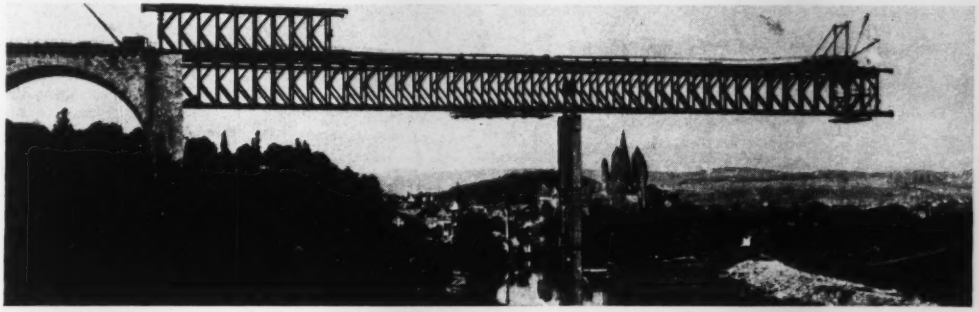
THIS K-TRUSS RAILROAD BRIDGE replaces the original tied-arch spans in a well-known structure across the Rhine at Mainz. Three of six prewar bridges are now restored.



LIFTING A PART-SPAN of the Rhine railroad bridge at Mannheim back on pier is being done by a 200-ton floating crane. Twin bridges existed here before the war, one of which already has been replaced by three K-truss spans each 300 ft. long.

Germans Rebuild Their Bridges

REBUILDING of the war-shattered bridges across the Rhine River and its tributaries in Germany began promptly after the war—and has continued unabated. Even so, many structures are still to be replaced or repaired. Illustrated here are a few of the more spectacular jobs which were getting under way when ENR's comprehensive report on the Rhine bridge building operations was published (ENR Oct. 30, 1947, Vol. p. 588). These pictures came from Josef Weber, chief engineer of the M.A.N. Co. and consultant to the Allied Military Government.



AUTOBAHN BRIDGE across the Lahn River Valley at Limburg, on the Frankfurt-Ruhr route, has spans 207, 311 and 207 ft. in length. German military K-type trusses are used as the bridge is cantilevered across river 25 mi. above Rhine junction.

MEN AND JOBS

R. L. Iddins has been appointed division construction engineer for the First Division of the Tennessee Department of Highways & Public Works at Knoxville, succeeding **W. E. Dunlap**, now division construction engineer for the Fourth Division at Jackson. Mr. Iddins attended the civil engineering school of the University of Tennessee at Knoxville, and has been with the highway department since June, 1921, serving in various assignments throughout the first construction division. His latest assignment, prior to his present promotion was that of senior resident engineer at Johnson City, where he supervised the construction of many large state and federal-aid construction projects.

Oscar N. Lindahl, former financial vice-president of Carnegie-Illinois Steel Corp., has been named executive director of the Pennsylvania General State Authority and the Highway and Bridge Authority—at a salary of $18,000 a year. During the next two years the General State Authority has a $147,000,000 public works program to be financed by revenue bonds. The public buildings will be rented to the commonwealth until the bonds are retired, when they will revert to the state as fully-paid property. The Highway and Bridge Authority plans $40,000,000 in major road and bridge construction. Lindahl participated actively in Carnegie's $300,000,000 construction and expansion program.

Changes in the engineering staff of the North Carolina State Highway & Public Works Commission are:

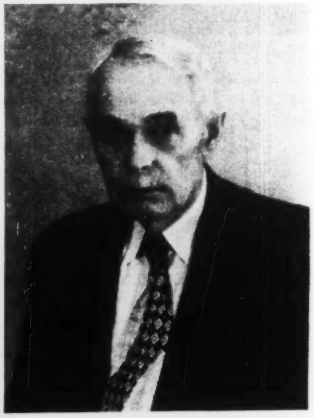
Hunter D. Irving, assistant division engineer at Greenville, is being sent to Raleigh, to join staff of **W. E. Hawkins**, state construction engineer; **Jasper L. Phillips**, district engineer, Kinston, sent to Greenville, to replace Irving; **Heber Gray**, maintenance supervisor, Kinston, succeeds Phillips as district engineer; **Ralph Pollock**, resident engineer, Kinston, will exchange jobs with **J. B. Cutchins**, district engineer at New Bern.

R. R. Garnett has been appointed to the newly-established position of resident engineer at Richland, Wash., according to Col. William Whipple, U. S. District Engineer at Walla Walla, Wash. He will be in charge of construction of 2.7 mi. of levees along the Yakima and Columbia

(*Continued on page 46*)

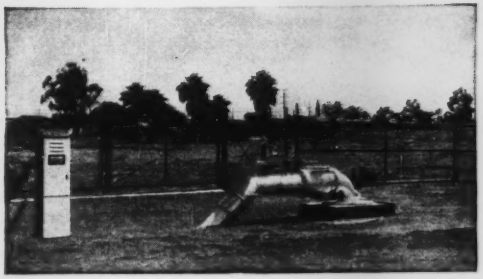
The personnel of the Naval Volunteer Reserve Construction Battalion 3-24 of Whitestone, New York City, make an evening inspection of bridge construction on Van Wyck Expressway in the Borough of Queens. At top, left to right, are Lt. J. P. Barnes, Lt. C. B. Cleveland, and Lt. Commdr. A. S. Cipoila; in front, left to right, Lt. M. A. Grieco, Lt. C. L. Shea, Commdr. H. B. Gates, Jr. (C. O.) Commdr. H. C. Wilson, Lt. J. S. Golden; and Commdr. H. B. Roulett.

Pressing the switch button to deliver first water into Friant-Kern Canal in California's Central Valley Project is G. H. Hogue, retired location engineer, Bureau of Reclamation. With him are Gov. Earl Warren of California; Construction Engineer Richard K. Durant, Engineer Speed Leonard and Chief Engineer Leslie N. McClellan, all of the bureau. First water entering the incomplete canal will permit irrigation deliveries of surplus water as far south as St. John's River, some 90 mi. from Friant Dam, on the San Joaquin River. Firm deliveries in the 5,000 sec. ft. canal cannot be made until completion of the Delta-Mendota Canal permits exchange of Sacramento River water for that diverted into the Friant-Kern waterway from the San Joaquin River.



J. S. Bright, Deputy Commissioner of the Bureau of Public Roads, a unit of the General Services Administration, has retired after 32 years of service with Public Roads. A 1901 civil engineering graduate of the University of California, Mr. Bright started as a construction engineer for the Southern Pacific and Santa Fe railroads. After engineering work in San Bernardino County in 1917 he went with what is now the Bureau of Public Roads. In April, 1942, he was made district engineer in charge of civilian forces building the Alaska Highway.

soon to be surrounded by homes...

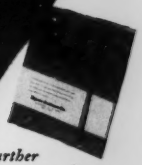


City of Long Beach picks the Submersible for three reasons

Quiet? Yes, because the submersible is a close-coupled motor pump unit *completely submerged* near the bottom of the well. But six Byron Jackson Submersibles were chosen for new subdivisions because the City and consulting engineers for the Municipal Water Works found three clearly defined operating advantages: (1) no danger of contamination or interrupted service because of vandalism, bombing or sabotage, (2) reduction of steel requirements and elimination of shaft and bearing troubles, and (3) lower overall maintenance costs.

BJ submersible pump

quiet...



For further information write for the "BJ Submersible" booklet.

Byron Jackson Co.
Since 1872
LOS ANGELES 54, CALIFORNIA
Offices in Principal Cities

rivers and a pumping plant, which is necessitated by McNary Dam construction.

Leon B. Kromer, Jr., formerly labor relations director of Byrne Organization, Inc., of Washington D. C., and labor relations assistant to the Chief of the Bureau of Yards & Docks U. S. Navy, has been named labor relations advisor of the Merritt-Chapman & Scott Corp. Mr. Kromer has relieved Frank W. Barnes who has retired but is being retained by the corporation in a consulting capacity.

Edison H. Johnson, assistant city building inspector at Durham, N. C., has been appointed city building inspector to succeed the late John T. Still. He is a graduate of the N. C. State College school of engineering, where he majored in construction engineering. After graduation he worked as a building inspector for the National Board of Fire Underwriters in New York City. During World War II, as a lieutenant colonel he commanded the 163rd and later the 26th Ordnance Battalion in the European Theater of operations.

John C. Oliver, former assistant city engineer, has been appointed chief engineer for Vancouver, B. C.

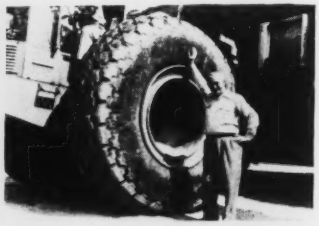
Ralph A. Macdonald, a reserve major in the Army Corps of Engineers, has been appointed acting project engineer of the $36,000,000 Pine Flat Dam on the Kings River east of Fresno, Calif. He succeeds **Lieut. Col. J. L. Newman,** who has been made chief of the construction branch of the Corps' Sacramento office.

Morton W. Lieberman, consulting engineer, has removed his office from 5 Maiden Lane, New York City, to 245 Nassau St., Princeton, N. J.

Ray Nunez, (left), and D. J. Monacchio, superintendent and general foreman, look over the $1,000,000, six-story warehouse. F. H. McGraw & Co. is building for Kimberly-Clark Corp., at Neenah, Wis. The new warehouse adjoining the Lakeview mill will contain nearly 260,000 sq. ft. of floor space. It will be a windowless building of brick and concrete.

Ilhan Sezer, assistant bridge engineer of the Turkish Department of Highways is shown here discussing materials and equipment for a timber bridge program with Ismail Canay, pile driver foreman, while Husnu Yuce, assistant maintenance engineer, looks on. Sezer is a graduate of M.I.T. and Yuce of the University of Illinois, Urbana-Champaign.

Huddled over blueprints, Howard Weiss, resident engineer for Lockwood-Greene Engineers, Inc., H. L. Longcrier, engineer in charge for the Daniel Construction Co., and E. S. Patterson, plant manager, plan current construction operations on the nearby Beaumont Mills plant at Coosa Pines, Ala.



Joseph Van Howling, superintendent for Associated Building Movers, Inc., Yonkers, N. Y., leans against a 8.33-ft. diameter tire of a 150-ton house-moving machine recently used to carry houses from the Van Wyck Expressway right-of-way to a new site a mile away in New York City. Ed Ross is the driver.

Elections and Activities

For the 15th consecutive year, members of the 308th Engineers Association of World War I named Lee Staffler, Sandusky, Ohio, as their secretary. Henry A. Huwer, Dayton, was elected president; Harry C. Glynn, Dayton, first vice-president; and F. P. Boyle, Dayton, second vice-president.

Frank W. Shelton, Jr., Cleveland, has been elected president of the Northeast chapter, Ohio Society of Professional Engineers. Fred A. Collins, city engineer of Ashtabula, was elected vice-president, and R. M. Plummer, Lake County Engineer, Painesville, was re-named secretary-treasurer. Trustees are E. B. Humphrey, F. R. Zethmayr, and C. C. Hadden.

MAJOR MEETINGS

Institute of Traffic Engineers, Wardman Park Hotel, Washington, D. C., Sept. 25-28.

American Society of Planning Officials, Hotel Statler, Cleveland, Ohio, Oct. 10-12.

American Society for Testing Materials—First Pacific Area National Meeting. Fairmont Hotel, San Francisco, Calif., Oct. 10-14.

Federation of Sewage Works Associations, Hotel Statler, Boston, Mass., Oct. 17-20.

Metal Congress and Exhibition, also American Welding Society, Public Auditorium, Cleveland, Ohio, Oct. 17-21.

American Public Health Association, Hotel Statler and Hotel New Yorker, New York City, Oct. 24-28.

37th National Safety Congress, Stevens Hotel, Chicago, Oct. 24-28.

National Conference on Industrial Hydraulics, Sheraton Hotel, Chicago, Ill., Oct. 26-27.

Engineers Council for Professional Development, Edgewater Beach Hotel, Chicago, Oct. 28-29.

National Reclamation Association, Hotel Newhouse, Salt Lake City, Utah, Nov. 2-4.

American Society of Civil Engineers, fall meeting, Hotel Statler, Washington, D. C., Nov. 2-4.

National Council of State Boards of Engineering Examiners, Sheraton Plaza Hotel, Daytona Beach, Fla., Nov. 10-12.

National Association of Housing Officials, Hotel Statler, Boston, Mass., Nov. 13-16.

Monsanto PENTA STARS in stage of St. Louis Municipal Opera

ST. LOUIS MUNICIPAL OPERA's revolving stage, installed by Missouri Floor, Inc., St. Louis, is made of wood treated with Monsanto PENTA, after consultation with Wood Treating Chemicals Company, also of St. Louis.

The revolving stage of St. Louis Municipal Opera stands in a grove of trees in Forest Park. Its roof is the sky—sometimes jewelled with stars, sometimes covered with water-laden clouds. Protection of this intricate stage from the elements, insects and fungi calls for an all-star wood preservative—Monsanto PENTAchlorophenol.

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- *It must be moisture-repellent* to reduce swelling . . . so that the stage will operate smoothly.
- *It must be toxic to termites,* insects and fungi so structural timbers will stay strong to carry the load of scenery and large casts.
- *It must be long-lasting protection* because replacement of this intricate woodwork is expensive.

PENTA, properly formulated, is the only wood preservative that can deliver *all* the qualities the opera stage needs.

Before penta-treated wood was employed, the stage floor had to be replaced in from one to three years. The present stage, treated with Monsanto PENTA, has been in service since May 1941 — still no signs of decay.

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Arctic Research

Because the University of Minnesota has started studies of snow, ice and permafrost, the Corps of Engineers has picked that state as the scene of similar work and has appointed Lt. Col. Wm. A. Orr as head of its Arctic and sub-Arctic investigations. Since 1947 he has been teaching military science and tactics at the university.

Experts from Canada, Switzerland, Germany and the Scandinavian countries, where much cold-weather research has been done, will be brought to Minnesota to aid in the research.

Though the Army's chief interest is military—how to compact snow, for example, for emergency runways in the far north or polar regions—civilian agencies will be able to use much of the information for greater highway safety, ice removal and flight planning, it was emphasized.

Summer Commencement

Nine bachelor's degrees in civil engineering; one in sanitary engineering; three degrees of master of science in civil engineering; and one in sanitary engineering were granted at the first summer session commencement ever held at the University of Illinois, Sunday Aug. 14.

During the war years when the university expanded its program to full year's work, the summer session was accelerated to include a full semester, or 16 weeks, with the "Summer Session Commencement" held in mid-October. In 1948 the summer session reverted to the former eight weeks basis, as in 1949, but this year marked the first summer session commencement.

Chief of Engineers to direct experiments

Announcement of the transfer of the Waterways Experiment Station, Vicksburg, Miss., to the direct jurisdiction of the Chief of Engineers has been made by Lt. Col. Ralph D. King, director. The station has previously been under the jurisdiction of the president of the Mississippi River Commission.

The transfer will cause some changes in administrative procedures but will not affect the organization or location of the station. Under the new program the director has been delegated authority equivalent to that of a division engineer.

The Waterways Experiment Station will now exercise technical supervision over all hydraulic model tests, whether performed at that installation, other Corps of Engineers' laboratories, or at university facilities; and over such concrete and soils investigations as may be directed by the Chief of Engineers.

Established at Vicksburg, as a hydraulic laboratory in 1929, the activities of the Waterways Experiment Station have expanded to include the study of soil mechanics, flexible pavement (asphalt), research in concrete, and the operation of the Corps of Engineers research center.

Irrigation Engineering

The Irrigation Institute has been established as a division of the graduate school of the Colorado A & M College, Fort Collins, Colo. It offers the degrees of Master of Science in Irrigation Engineering, Master of Irrigation Engineering, Master of Science in Watershed Management, Master of Forestry, Master of Science in Agronomy, and Master of Science in Economics.

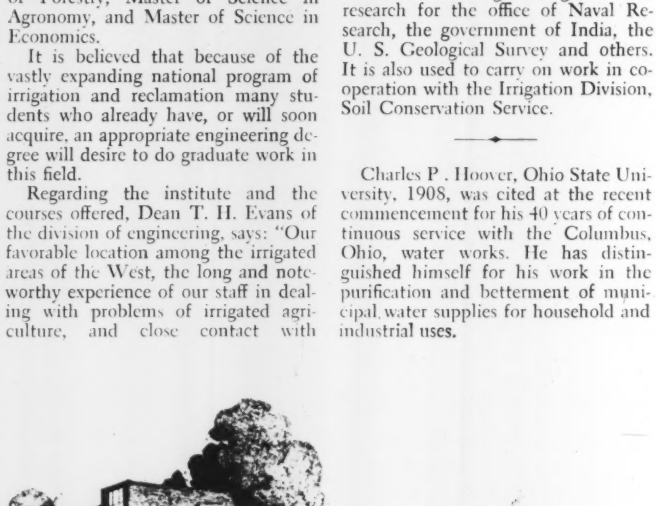
It is believed that because of the vastly expanding national program of irrigation and reclamation many students who already have, or will soon acquire, an appropriate engineering degree will desire to do graduate work in this field.

Regarding the institute and the courses offered, Dean T. H. Evans of the division of engineering, says: "Our favorable location among the irrigated areas of the West, the long and noteworthy experience of our staff in dealing with problems of irrigated agriculture, and close contact with engineers of the U. S. Bureau of Reclamation and Department of Agriculture, combined to form a unique opportunity for advanced study and research in the many problems of such multiple-purpose developments."

D. F. Peterson is the new head of the civil engineering department, which carries on much of the work in irrigation engineering. The advisory board consists of Charles A. Tory, president emeritus, Colorado A & M College; John L. Savage, consulting engineer, Denver; Clifford H. Stone, director, Colorado Water Consevation Board; J. C. Stevens, consulting hydraulic enigneer, Portland, Ore.; E. B. Debbs, consulting engineer, Denver; R. J. Tipton, consulting engineer, Denver; and Omer J. Kelley, senior soil scientist, Bureau of Plant Industry, Soils and Agricultural Engineering, Fort Collins, Colo.

On the campus is a large hydraulic laboratory formerly used by the U. S. Bureau of Reclamation, which is under the supervision of Maurice L. Albertson, conducting investigations and research for the office of Naval Research, the government of India, the U. S. Geological Survey and others. It is also used to carry on work in cooperation with the Irrigation Division, Soil Conservation Service.

Charles P. Hoover, Ohio State University, 1908, was cited at the recent commencement for his 40 years of continuous service with the Columbus, Ohio, water works. He has distinguished himself for his work in the purification and betterment of municipal water supplies for household and industrial uses.



ENGINEERING BUILDINGS—Two new engineering buildings, costing a total of $2,500,000, will be the first units of a $5,000,000 engineering group on the University of California campus at Los Angeles. The first building will be completed early next year. The new units will have aeronautic and hydraulic laboratories, and a wind tunnel, and floors built to carry 7-ton fork-lifts for equipment moving. Allison & Rible are the architects and Wurdeman & Becket, supervising architects.

OBITUARY

William D. Golike, 64, with the U. S. Corps of Engineers in the St. Louis and Omaha districts for the last 20 years, died at St. Louis, Mo., Aug. 25. During most of his career he was a civilian inspector of flood control projects.

Frank M. Caven, 86, secretary of the Philadelphia Fairmount Commission and twice director of public works of Philadelphia, died there recently.

William J. Richards, 86, retired president of the Philadelphia and Reading Coal and Iron Co. to which he rose from a minor position in the engineering department, died Aug. 17, at Pottsville, Pa. He retired in 1927.

Lawrence L. Beebe, 70, formerly an engineer with the Federal Works Administration's Bureau of Public Roads in Washington, D. C., died there Aug. 28. A graduate of Cornell University in 1903, he worked for the Lehigh Valley Railroad before going to Washington in 1908 with the Bureau of Standards. He remained as an engineer there until 1914 when he joined the Bureau of Public Roads. He retired from his position last year.

Fred W. Schramm, 67, since 1942 engineer for the U. S. Soil Conservation Service at Louisville, Ky., died there Aug. 27.

N. E. Offenhiser, 75, consulting engineer of the Yazoo Mississippi Delta Levee Board, died at Memphis, Tenn., Aug. 27. He had spent more than 40 years building and maintaining Mississippi River levees. He was an engineering graduate of Valparaiso University.

Allyn J. Coon, 60, Wauwatosa, Wis., plant engineer of the International Harvester Co., died Aug. 26. He attended Milwaukee School of Engineering.

John Oscar Morris, a construction engineer for Brann and Stuart Co. died September 1 at his Norristown, Pa. home.

Charles J. des Baillets, 65, chief engineer of the technical division of Montreal, Que., died Aug. 30.

James Benjamin Spratt, 83, of Char-

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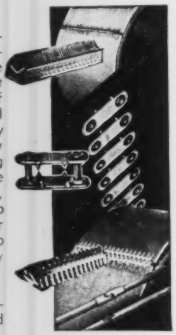

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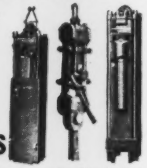

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lotte, N. C., Mecklenburg County surveyor for 35 years until his retirement in 1930, died Aug. 31.

Walter O. Myers, 67, city engineer and water and light plant superintendent of Ottawa, Kan., died Aug. 27. He had been employed by the city for 46 years.

Benedict F. Raber, 67, an authority on air conditioning and refrigeration who retired recently after 34 years as professor of mechanical engineering at the University of California, died Aug. 15 in Berkeley, Calif. Prof. Raber, who was awarded a bachelor of science degree by Purdue University, helped design the Berkeley filtration plant, and he also designed water pumping plants for the Berkeley, San Francisco, and Davis campuses of the university. He taught at Purdue and Nebraska universities before joining the California faculty in 1915.

Arthur George James, 50, city planning engineer of Palo Alto, Calif., died Aug. 24. A graduate of Stanford University with both a civil and an electrical engineering degree, Mr. James spent two years with the Great Western Power Co., Sacramento, before becoming assistant city engineer for Palo Alto. After serving as a commander with the Navy Civil Engineer Corps he returned to Palo Alto as a consulting civil engineer and subsequently became planning engineer to the city planning commission. At the time of his death, he was sub-chairman of the San Francisco Bay Area Transit Authority and chairman of the organization's legislative committee.

Alfred K. Bouvier, 28, an engineer on the Southern California Edison Co. dam project near North Fork, Madera County, Calif., was killed in an automobile accident Aug. 27. He was a veteran.

Eugene W. Winter, 46, San Francisco engineer and owner of the Eugene V. Winter Co., engineers' and manufacturers' representative, died recently in Boyes Springs, Calif.

Edmund W. Bacon, 85, former engineer and superintendent of the East Whittier Land Water Co., died in Whittier, Calif., recently.

Eugene W. Sweet, 48, principal construction engineer in the Los Angeles City Bureau of Inspection, died recently. He had been 20 years with the Bureau of Inspection as field inspector, office engineer, and principal construction engineer.

UNIT PRICES

Pedestrian tunnel bid; unit prices available

Bids on construction of a pedestrian underpass under the Baltimore and Ohio Railroad at Bethesda, Md., have been opened by the Maryland State Roads Commission. The contract calls for construction of a multi-plate metal pedestrian tunnel 75 ft. in length and 8 ft. in diameter. The Leo Butler Co. proposed $27,046 as low bid.

Paving within the tunnel, concrete portals and electric lighting are all included in the contract which was bid on by seven contractors. Due to train traffic overhead it is impossible to use the cut and cover method, so the underpass must be put in place by tunneling. No materials are to be furnished by the owner. Clearing and grubbing, excavation, the steel-lined tunnel and guniting are items included on the bid schedule. Prevailing wages for skilled labor vary from $1.90 to $2.65 per hour; semi-skilled labor must be paid $1.45 to $1.90 per hour; common labor earns from $1 to $1.25.

Schuylkill River dredging gets $2,211,000 low bid

The Schuylkill River Project Engineers opened bids Aug. 15 and awarded a contract for 4,750,000 cu. yd. of channel dredging plus 8,000 cu. yd. of culm excavation, to the American Dredging Co. of Philadelphia, Pa. Four contractors entered bids varying from the award price of $2,210,830 to a high of $3,233,000.

The contract stipulates that the work must be completed by May 31, 1951. In addition to the dredging and excavation the contract includes the clearing of brush and trees from 130 acres of land bordering on the river. There was great divergence in the prices submitted for removal of three temporary dams that are to be taken out of the river as part of the project.

Eastern Engineering Co., of Atlantic City, N. J., Norfolk Dredging Co., Norfolk, Va., and Sabin Construction Co., Hartford, Conn. were the unsuccessful bidders.

Unit price reports on jobs cited in these columns will be mailed to readers of Engineering News-Record on request at no charge. Address: Manager, Business News Dept., Engineering News-Record, 330 W. 42nd St., New York 18, N. Y. Identify by quoting headline as used herewith, and be sure to give full mailing address.

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

September 29

Mass., Newton—Commonwealth of Massachusetts, Metropolitan Dist. Comm., W. T. Morrissey, comr., 20 Somerset St., Boston, Contr. 179, furnishing, del. c. i. pipe and fittings, gate valves, automatic cone valves, motor driven centrifugal pumps and venturi meter, appurtenances.

September 30

Ia., Liscomb—City, water distr. and pressure tank sys., $35,000. H. C. Pedersen, Marshalltown, engr.

October 3

Tex., Pleasant Grove (Dallas P. O.)—Dallas County Water Control & Imprvt. Dist. 3, 8122 Macon St., Dallas, 100,000 gal. elevated steel tank and tower, watermains. $65,000. Plans deposit $25. Koch & Fowler, 713 Gr Natl. Life Bldg., Dallas, engrs. CD 9/13.

October 4

†N. Y., Schenectady—U. S. Atomic Energy Comn., Schenectady Operations Office, P. O. Box 1069, water supply lines, West Milton Area, Inv. No. AE-50-SCH-2.

October 5

●Tex., Longview—City, City Hall, water filtration plant, Proj. 3, 2 mi. from here, $750,000, water pumping plant at Lake Cherokee, 9 mi. from here, $375,000. Plans deposit $50 each. Julian Montgomery, 602 West Ave., Austin, engr. CD 6/9/48.

October 13

Ia., Cedar Rapids—City, water purification plant addn., incl. filter bldg. exten., filter equip., concrete mixing sedimentation and clarifier basins and equip., pipe connections for increasing purification capacity 12 mg. d., **(A)** structures and piping **(B)** mixing and clarifier equip. **(C)** filter equip. Plans deposit $25 for Contr. A, $10 for Contr. B and $20 for Contr. C. Alvord, Burdick & Howson, 1401 Civic Opera Bldg., Chicago, 6, Ill., engrs.

October 19

N. C., Salisbury—City, J. A. English, mgr., WW, Sect. 6, water purification plant; Sect. 7, pumping equip.; Sect. 8, electrical work; Sect. 9, plumbing. Sect. 10, heating Plans deposit $25. Pierson & Whitman, Raleigh, engrs. CD 3/27/47.

Bids Asked

Tex., Dallas—S. & E. Corp., Box 2399, WW, $40,000. Consolidated Architects & Engineers, 1005 Fort Worth Natl. Bank Bldg., Fort Worth, engrs. and archts.

Tex., Longview—Tennessee Eastman Corp., Kingsport, several miles 20 in. c.i. waterlines. $115,000.

LOW BIDDERS

Ark., McCrory — City, Aug. 29, WW pipeline extens., 15,555 lin. ft. 2- to 6-in. c. i. pipe, 3,700 lbs. c.i. fittings and specials, 75 meters, yokes and boxes, 24 gate valves, 8 fire hydrants, etc., from M. & W. Constr. Co., P.O. Box 148, Tupelo, Miss., **$34,432.** CD 8/3.

Calif., Oakland—East Bay Municipal Utility Dist. 512 16 St., Sept. 7, 6- to 30-in. welded steel and c.i. watermains in E. 11 and E. 12 Sts. and adjacent streets., Spec. **LS-476**, from McGuerr & Hester, 796 66 Ave., Oakland, **$113,354**; 5,600 lin. ft. 30 in. welded steel watermains from 59 and Genoa Sts. to Stanford Ave. and Hollis in Emeryville, Spec. LS-477, from O. A. Fogelberg, 52 Barbara Rd., Orinda, **$71,995.** CD 8/25.

Ga., Milledgeville — Baldwin Co., Milledgeville, Aug. 30, WW imprvs., from R. H. Sasser, Jr., Albany, **$98,627.** CD 8/10.

Ill., Springfield—City, City Hall, 4 m.g. lakeside clearwell, Lake Springfield plant, from J. L. Simmons Co., Decatur, **$266,666.** Est. $300,000. CD 7/1.

Ind., Bainbridge—Town Bd., Aug. 30, WW imprvs., distr. sys., from R. D. Breen Constr. Co., Barnett St., Vincennes, **$47,363.** CD 8/25.

Md., Laurel—Washington Suburban Sanitary Comn., 4017 Hamilton Ave., Hyattsville, Aug. 23, filtration plant, and 2 reservoir structures, Contr. 663 W, from Chicago Bridge & Iron Co., 332 Michigan Ave., Chicago, Ill., **$412,800.** CD 8/1.

Mass., Framingham—Town, Dpt. P. Wks., Memorial Bldg., Aug. 29, watermains, from Pacella Bros., Inc., 63 Olney St., Dorchester, **$14,965.** Whitman & Howard, 89 Broad St., Boston, engrs.

Mass., North Reading — Town of North Reading Special Water Comn., Town Hall, Aug. 23, watermain extens., bldg. valve chamber, altitude valve, etc., from Binney Constr. Co., 120 Potter St., Cambridge, **$82,255.** Whitman & Howard, 89 Broad St., Boston, engrs.

Mass., Raynham—Town of Raynham Water Dist., Town Hall, Aug. 24, watermain and fdn. for standpipe, etc., Center Water Dist., from A. C. Trojano, 102 Shaw St., Braintree, **$59,020.**

†N. M., Las Cruces—U. S. Eng., Box 1538, Albuquerque, Sept. 1, water storage tank relocation, Serial No. Eng-29-005-50-11, from Tom L. Harpster, 525 Detering St., Houston, Tex. **$31,822.** Est. $30,000. CD 7/23.

O., Van Wert—City, water sys., incl. force watermain from plant to city, from Barney-Massa Constr., 327 W. Berry St., Fort Wayne, Ind., **$53,443.** CD 11/11.

†Texas—U. S. Eng., 606 Santa Fe Bldg., Galveston, rejected bids Sept. 4, water sys. (U. S. Maritime Comm. Reserve Fleet usage) Inv No CIVENG-41-243-50-33. L. B **$35,212.** CD 8/10.

Tex., San Antonio — Albert Hirschfeld, Milam Bldg., and Wm. Ochee, Alamo National Bldg., Aug. 30, waterlines, from Dean Word & Co., 446 N. Rosewood, **$28,261.** CD 8/22.

CONTRACTS AWARDED

Fla., Miami Springs—Town, water distr. sys. to Richard E. Vaughn, 2420 S.W. 4 St., Miami, **$117,543** Bids 8/22. CD 8/31, under LB.

Ga., Valdosta — City, rebuilding reservoir, etc., to J. B. McCrary Corp., 22 Marietta Street Bldg., Atlanta, **$119,935.** Bids 9/7. CD 8/16.

Ind., Lawrence—Town, Town Bd., WW imprvs., distr. sys., to L. L. Stone Constr. Co., Lawrence, **$45,318,** Est. $50,000 Bids 8/19. Awarded 8/26.

Ia., Rockwell City—City, Edith Dixon, clk., City Hall, deep well, to Thorp Well Co., 2340 6 St., Des Moines **$31,421.** Bids 8/2 CD 8/9.

Minn., Odessa—Village, Le Roy, Strel, clk., water supply and distr. sys., to Barbarosa & Son, St. Cloud, **$47,809.** Bids 9/1. CD 8/24.

O., Van Wert—City, water sys., raw pumping station, to Birmingham Constr. Co., Birmingham, Mich., **$98,580*****excavation and constructing 340 m.g. reservoir, to Lewis Fridinger Co., Ann Arbor, Mich., **$171,720***** water treatment softening plant and bldg., to C. & C. Constr. Co., 2001 E. Pontiac St., Fort Wayne, Ind., **$381,988.** Grand total, $652,288. CD 11/11.

Tex., Baytown—Baytown Constr. Co., c/o B. F. Sturman, Sterling Bldg., Houston, waterlines and facilities, to Vernon L. Miller, 1st Natl. Bank Bldg., Houston. Approx. **$35,000.** CD 8/25.

N. S., Dartmouth—Municipality, c/o R. D. Thompson, clk., Dartmouth, water extens., water meter installation. Own forces. **$56,000.** J. W. Labey, town hall.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	

Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
●	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

N. S., Sydney—Municipality, watermains. Own forces, **$50,000.** J. Cossett, city engr.

Ont., Peterborough — PU Utilities Comn., Peterborough, watermain, own forces, **$45,800.** A. E. Chambers, city engr.

Que., Bourlamaque — Municipality, watermains, to Northland Constr. Co. Ltd., 7 Third Ave., Val d'Or **$75,000.** Wilfrid Dumont, Val d'Or, engr.

SEWERS, WASTE DISPOSAL

BIDS ASKED

September 26

N. H., Laconia — State of New Hampshire, Arthur E. Bean, comptroller, State Capitol, Concord, sewage disposal plant imprvs., Laconia State School. Plans deposit $10. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., engrs.

September 28

Fla., Tampa—Bd. Representatives of City of Tampa, Divisional G1, G2 and G3, Krause Street Pumping Station. Extended date. Greeley & Hansen, 220 S. State St., Chicago, 4, Ill., engrs. CD 8/18.

October 3

Tex., Pleasant Grove (Dallas P. O.)—Dallas County Water Control & Imprvt. Dist. 3, 8122 Macon Ave., Dallas, sanitary sewer laterals. $50,000. Plans deposit $25. Koch & Fowler, 713 Great Natl. Life Bldg., Dallas, engrs.

October 4

●Neb., Omaha—City, City Hall, 18 and Farnam Sts., Benson Sewer, $1,200,000. E. W. Woodbridge, city engr. CD 8/9.

October 5

Calif., Los Angeles—City, City Hall, administration laboratory for Hyperion Activated Sludge Plant, $450,000. Lloyd Aldrich, city engr.

October 10

Va., Roanoke—At office City Clk., Municipal Bldg., 80,588 lin. ft. 6- to 24-in. vit. clay sewer mains, necessary wye branches, manholes, etc. Plans deposit $20. Mattern & Mattern, 118-A Campbell Ave. S. W., engrs. CD 8/19.

October 11

S. C., Woodruff — Town, sanitary sewer imprvs. Approx. $50,000. Plans deposit $25. The Harwood Hubbs Co., Montgomery Bldg., Spartanburg, engr. CD 6/28.

Tex., Cleveland — City, sewage treatment plant addns., imprvs. $50,000. Garrett Eng. Co., 5908 Almeda Rd., Houston, engrs. CD 7/19.

October 20

N. Y., Liberty—Town Bd., at office Whitaker Wells, clk., Sherwood Bldg., Contr. 1, 8,500 lin. ft. 8- to 12-in. sewers, 32 manholes, other appurtenances. Plans deposit $12; contr. 2, sewage treatment plant, incl. control bldg. with pump station and chlorinator, primary and secondary settling tanks, primary and secondary trickling filters, sludge digester, sludge drying beds, manholes, etc., Plans deposit $30, for Swan Lake Sewer Dist.; adv ENR 9/22. CD 10/22/47.

Bids Asked

Tex., Longview—Tennessee Eastman Corp., Kingsport, sanitary and storm sewerage sys. $90,000.

LOW BIDDERS

Ark., McCrory—City, Part 1, sewage collection sys., incl. 32,100 lin. ft. 6- to 12-in. sewers, 7,150 lin. ft. 4 in. service lines, 411 wyes, 88 manholes, 5 drop manholes, from E. W. Daniel, Box 548, North Little Rock. **$67,878.**

●Calif., Oakland—East Bay Municipal Utility Dist., 512 16 St., Oakland, rejected bids Aug. 24, intercepting sewers, Spec. SD-36, L.B. **$6,059,408.** CD 8/30, under LB.

Calif., San Francisco — Dept. P. Wks., City Hall, Sept. 7, North Point Sludge force main, Proposal A, from M. J. Lynch & Robt. McNair, 2251 Revere Ave., **$394,918;** Proposal B, from Charles L. Harney, 575 Berry St., **$388,181.** CD 8/19.

Conn., West Haven — Town, 578 Campbell Ave., Sept. 2, sewage treatment plant addn., alterations, Blohm St., from C. W. Blakeslee & Sons, 58 Waverly St., New Haven, **$340,122.** CD 8/17.

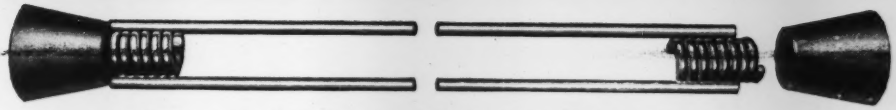
Ga., Atlanta—Fulton Co., Atlanta, sanitary sewers in Rosewell Rd., from Arthur Pew Constr. Co., Buckhead Theater Bldg., Atlanta, **$18,701.** CD 8/26.

N. Y., Albany—Bd. Contract & Supply, City Hall, Sept. 9, Open Cut Portion of Beaver Creek Trunk Relief Sewer, approx. 1,600 ft. rein. con. sewer from vicinity S. Pearl St. to Hudson River along Rensselaer St., from Louis Longhi & Son Box 580, Glens Falls, **$549,250.** CD 8/10.

N. D., Bismarck—City, City Hall, Sept. 6, storm sewerage sys., from Delzer Constr. Co., Bismarck, **$594,015.** CD 8/24.

R. I., Cranston—City, Bd. Contracts & Purchasing Office, City Hall, Sept 1, sewer construction, from Capaldi Bros. Constr. Co.,

(Continued on page 54)



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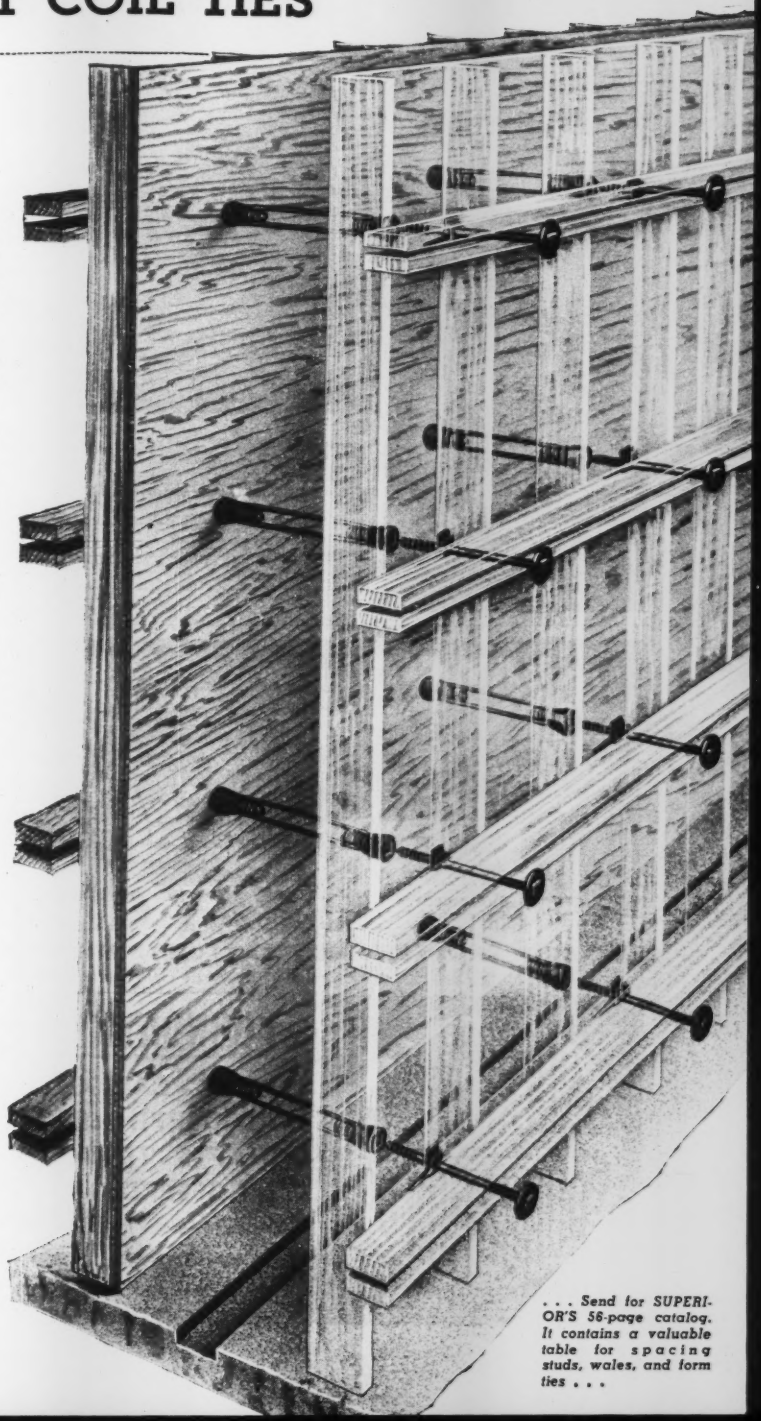

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(Continued from page 52)

278 Silver Spring St., Providence, **$83,175.** CD 6/9.

R. I., Providence—City, c/o City Clk., City Hall, sewer lines on various streets, from Campanella & Cardi Constr. Co., 780 Jefferson Blvd., Warwick, **$111,672.**

Tex., Kermit—City, cancelled bids to have been opened Sept. 27, sanitary sewerage sys. $100,000. CD/9/9.

Tex., San Antonio—City, City Hall, Sept. 8, sanitary sewer mains, various streets, from George Brombaugh, 710 W. Theo St., **$52,221.** W. W. Toxie, city engr. CD 12/15/47.

Wis., Monona (P. O. Madison)—Village, 3425 Winnequah St., Aug. 29, sanitary sewers and lift stations, from Paul Di Paolo, 6422 S. Damen St., Chicago, Ill., **$77,772.** CD 8/1.

CONTRACTS AWARDED

Calif., Montebello—City, sanitary sewers in Washington Blvd., Maple Ave. to Bluff Rd., to Bosko Constr. Co., Inc., 1728 Greenwood St., **$67,553.** Est. $74,120. Bids 9/6. CD 8/29.

Connecticut — State, G. Albert Hill, hy. comr., State Office Bldg., Hartford, 2,763 lin. ft. storm sewers Bridgeport Ave., U. S. Rt. 1, Milford, and 1,506 lin. ft. sanitary sewers Chestnut St. and clear water drainage N. Y., N. H. & H. R. R. Yard for relocation U. S. Rt. 1, New Haven to Joseph F. Kelly, 902 Chapel St., New Haven, **$50,242.** CD 8/24.

Kan., Olathe—Sewer Dists. 26, 27 and 28, c/o Johnson Co., Comnr., Olathe, laterals sewers in above dists. to J. C. Nichols Co., 310 Ward Parkway, Kansas City, Mo., **$60,037.** Bids 8/29, Ansel Mitchell, 310 Ward Parkway, Kansas City, Mo., engr. CD 12/18/44.

La., Houma—City, City Hall, 10 mi. 8- to 24-in. sewer line, 4 lift stations, force account. Approx. **$425,000.** CD 8/25, under LB.

Nev., Las Vegas — City, City Hall, sewage treatment plant to Hoagland-Findlay Eng. Co., 3254 Cherry Ave., Long Beach, Calif., **$494,180.** Bids 9/7. CD 8/17.

O., Warren—City, incinerator plant, to Morse-Boulger Co., 205 E. 42 St., New York, N. Y., **$199,973.** Bids 6/13. CD 5/13.

S. D., Hurley—City, sewers and sewage plant, to Sanders Sanitary Co., 124 S. Main St., Sioux Falls, **$58,299.** Dakota Eng. Co., Mitchell, engr. Bids 9/1.

Tex., Baytown — Baytown Constr. Co., c/o B. F. Sturman, Sterling Bldg., Houston, sanitary and storm sewers, to Vernon L. Miller, 1st Natl. Bank Bldg., Houston, **$63,120.** CD 8/25.

B. C., Chilliwack—Central Mortgage & Housing Corp., 360 Homer St., Vancouver, sanitary sewerage sys., water distr. sys., Chilliwack Army Camp, to Christian & Allan, Ladner, **$60,000.** Awarded 9/2.

Ont., Mount Forest—Municipality, c/o R. M. Grant, clk. Mount Forest, sewers, to Swansea Constr. Co. Ltd., 363 Rogers Rd., Toronto, **$50,000.** C. A. Meadows & Assoc., 4 Grange Rd., Toronto, engrs.

Ont., Peterborough—P. Utilities Comn., c/o R. L. Dobbin, Peterborough, sewers, own forces, **$52,000.** A. E. Chambers, city engr. CD 1/10/45.

Ont., Port Arthur—City, A. H. Evans, city clk., incinerator, Duluth Rd., to G. R. Houston, Ltd., Graham Horn Block. Approx **$55,300.** S. E. Flook, c/o owner, engr. Bids 7/30.

Ont., Windsor—Municipality, sewers, to Keystone Contractors, Ltd., 7 McDougall St., Windsor, **$90,696.** R. Desmarais, city engr.

Que., Montreal—Municipality, sewers, Calita St., to Frank Lapan Ltd., 7725 Souligny St., **$34,485.** H. A. Gibeau, city engr.

Que., Montreal North—Town, Montreal North, sewers in Belleville, Pelletier and Laurentides Sts. to James Accurso, Registered, 10150 St. Lawrence Blvd., Montreal, Approx, **$70,000.** CD 6/20.

BRIDGES

BIDS ASKED

September 28

Rhode Island—Div. Purchases, at office Franklyn A. Adams, purch. agt., Smith St., Providence.

Providence Co.—expressway from Hartford Ave. to end of limits of Contract 1, incl. earth and embankment work, bridges, Service Road 4, Atwood Street extens., etc., Olneyville Square, R. I. Contr. 4917, FAP No. U-UGO-43 (1). Plans deposit $50. CD 3/3/48, under R. I., Providence.

September 29

New Jersey—Spencer Miller, Jr., comr. State Hy. Dpt., Trenton.

Morris Co.—bridge over Whippany River, Fed. Aid Secondary Proj. S-114 (1), Morris Twp. Plans deposit $10.

September 30

Pennsylvania—State Hy. Dpt., Harrisburg.

Westmoreland Co.—I-beam bridge and native stone or crushed aggregate base with bit. 1,582 ft. Hempfield Twp., L. R. 641 25, Sect. L.

Westmoreland and Allegheny Counties—continuous steel deck truss and I-beam viaduct, incl. 5 truss and 24 I-beam spans and c. conc. pavement 7,395 ft., L. R. 188 (2); L. R. 70 (12) T. R. 56 and 28 Road No. 9801, New Kensington Tarentum Boros.

October 5

●**New York**—Bureau Contracts & Accounts, Albany.

Erie Co.—Terrace Railroad grade separation project, Buffalo, $4,500,000, CD 12/6/44, under N. Y., Buffalo.

Ulster Co.—grade separation facilities at West Shore Railroad Crossing, Kingston, $991,000.

LOW BIDDERS

Delaware—State Hy. Dpt., Wilmington, Sept. 6, Contr. 12, east approach grading, Delaware River Memorial Bridge, from Henry C. Eastburst & Son, Newark, **$56,210**; Contr. 14, west approach grading, Delaware River Memorial Bridge, from Henry C. Eastburn & Son, Newark, **$134,101.**

Pennsylvania — State Hy. Dpt., Harrisburg, Sept. 9, I-beam bridge, bit. surf., crushed aggregate base, wid'n. pavement with crushed aggregate base, bit. surf. new base and existing pavement with bit. surf. 2.812 ft. L. R. 20109, Sect. 1 B, over Cussewago Creek, Vernon Twp., Crawford Co., from The Baldwin Brothers Paving Co., 1690 Commerce Bldg., Cleveland, 14, O., **$145,428.** CD 8/19.

†Virginia—Bureau Pub. Roads, General Services Admin., 1449 Columbia Pike, Arlington, Aug. 26, Proj. Va. DA-WR-8, Bridge 21 extension of Pentagon Road Network, from E. L. Daniels Co., 2112 N. Quincy St., Arlington, **$72,793.** CD 8/3.

CONTRACTS AWARDED

Ia., Hampton—Franklin Co., Hampton, 13 bridges, to Brogan Constr. Co., Masonic Temple, Des Moines, **$101,486.** Bids 8/26. CD 12/6/44.

La., Shreveport—City, City Hall, viaduct with approaches Allen-Dalz 11-Linwood grade separation proj., to Cook Constr. Co., P. O. Box 1151, Jackson, 5, Miss., **$588,156.** Bids 8/30, awarded 9/6. CD 9/7, under LB.

Maryland — State Hy. Dpt., Baltimore, pier forms for Chesapeake Bay Bridge, Contr. 10-10-87, Anne Arundel and Queen Annes Counties, to Bethlehem Steel Co., Mercantile Trust Bldg., Baltimore. **$998,700.** Bids 8/9. CD 8/12, under LB.

●North Carolina—State Hy. & Pub. Wks. Comn., Raleigh, bridge over Neuse River, on U. S. 70, at New Bern, 1.023 mi. Proj. 2130, Craven Co., to Bowers Constr. Co., Box 1706, Raleigh, **$1,137,224.** Est. $1,000,000. Bids 8/16, awarded 9/7. CD 8/19, under LB.

STREETS AND ROADS

BIDS ASKED

September 27

Iowa — State Hy. Dpt., Ames.

Benton Co. — grading 10.12 mi. U. S. 30 from U. S. 218 west to Iowa 131, F-278 (2). Approx. $50,000.

●Oregon — U. S. Eng., 628 Pittock Block, Portland, Zone 5, streets, sidewalks and driveway approaches and providing appurtenant drainage, construct water and sewerage systems and electrical distr. sys. for temporary housing at Lookout Point Dam Housing Area, in Lane Co. adjacent to town of Lowell on Middle Fork of Willamette River, apprtox. 22 mi. southeast of Eugene, Serial No. CIVENG-35-026-50-84.

September 28

Rhode Island—Div. Purchases at office Frank-lyn A. Adams, purch. agt., Smith St., Providence.

Kent Co. — b. conc. Class 1, Type 1-1 resurf. 0.33 mi. Post Rd. from London St. to 1st Ave., Contr. 4911.

Washington Co.—grav. with calcium treated surf. 0.24 mi. West Dr. to proposed State College gymnasium from Kingstown Rd. South Kingstown, Contr. 4918.

surf. treated grav. 0.198 mi. Exeter School Rd. relocation, in Exeter Contr. No. 4919. Plans deposit $20.

November 2

Louisiana—State Hy. Dpt., Baton Rouge.

Orleans Parish—new basin canal fill 1.944 mi. Pontchartrain Expressway, S. P. 283-07-04, F. A. P. U 409 (1). Plans deposit $3 without cross sections, $11, with cross sections., adv. ENR 9/22.

LOW BIDDERS

Arizona—State Hy. Dpt., Phoenix, Aug. 12, stabilizing 6½ mi. U. S. 66 west of Winslow, Navajo Co., from Phoenix-Tempe Stone Co., West Broadway, Phoenix, **$67,366.** CD 8/31.

Arizona—State Hy. Dpt., Phoenix, Aug. 30, grading, bit. 11 mi. Flagstaff-Winslow Sect. U. S. 66, Coconino Co., from W. J. Henson Constr. Co., Prescott, **$177,113.**

California — State Div. Hys., Sacramento, Sept. 7, plant mix on untreated rock surf. 2.9 mi. between Petaluma Creek and Tolay Creek, Sonoma Co., from Piombo Constr. Co., 1571 Turk St., San Francisco, **$473,012.** CD 8/1.

Calif., Redwood City—City, City Hall, Sept. 6, imprv. streets Encinal Hill Alleys, Stanley-Westgate Dist. and Virginia Ave., from L. C. Smith, First and Railroad Sts., San Mateo, **$59,935.** CD 8/29.

Louisiana — State Hy. Dpt., Baton Rouge, Sept. 7, b. conc. 8.854 mi. timber trestle bridges, Holum-Grayson-Sikes Hy., State Rts. 68 and 110 P.S. 41-05-06 and 91-09-06, Caldwell Parish, from L. M. Winford, Minden, **$151,871** ***b. conc. 6.382 mi. State Rt. 105, Welsh-Fenton State Hy., S.P. 198-03-06, Jefferson Davis Parish, from Barber Bros., Reymond Bldg., Baton Rouge, **$168,595*****b. conc. 4.287 mi. rein.-con. deck girder bridge Epps-Lake Providence Hy., State Rt. 45, S.P. 161-07-05, F.A.S.P. S-57 (3), West Carroll Parish, from W. H. Patterson & Co., Arbutus Standards Heights, Baton Rouge, **$162,447.** CD 8/24***b. conc. 4.758 mi., timber bridge repairs, Sibley-Downsville Hy., State Rt. 226, S.P. 157-03-06, Lincoln Parish, from G. E. Steed, Cotton Valley, **$55,810.** CD 9/1.

Maine — State Hy. Dpt., Augusta, Sept. 7, bit. grav. road 2.5 mi. FAP No. F 111 (9), J Monson, from Crooker & Simpson, Brunswick, **$83,933.** CD 8/26.

Maryland — State Rds. Comn., Baltimore, Sept. 6, grading, drainage, surf. 2.043 mi. Flintville-Castleton Rd., beginning at end Contract H-190 exten. southeasterly toward Castleton H-257-1-450, Hartford Co., from Thomas A. Riley Co., Chester, Pa., **$214,160.** CD 8/31.

Maryland—State Road Comn., Baltimore, rejected bids Aug. 23, surf. 0.6 mi. beginning approx. 1.25 north of Easton, State Rt. 33, exten. northeasterly via relocation of U. S. Rt. 50, Contr. 118-2-215, Talbot Co., L. B. **$99,336.** CD 8/30, under LB.

Massachusetts—Commonwealth of Massachusetts, Dpt. P. Wks., 100 Nashua St., Boston, Aug. 23, highway, School St., from Ralph E. Vicery Constr., Inc., Park St., Attleboro, **$52,522.** P. R. Kittfield, ch. engr. and

New Hampshire—State Hy. Dpt., Concord, grading, drainage, surf. treated grav. 4.35 mi. N. H. Route 102, Hudsons, Litchfield and Londonderry, Proj. S 291 (1), from Thomas W. Watkins & Son, Inc., 79 Elm St., Amesbury, Mass., **$156,982.**

New Jersey—State Hy. Dpt., Trenton, Sept. 8, constructing 0.784 mi. Myersville Rd. FAS Proj. S-95 (1), Morris Co., from Marsellis-Warner Corp., 10 Baldwin St., Montclair, **$71,935.** CD 8/22.

O., Toledo—City, Aug. 23, repaving Huron St. and Upton Ave., from Arthur S. Langenderfer, Inc., 4690 Bancroft St., **$53,553.** est. $52,949. CD 8/4; imprv. Alvin, Perth, Evansdale, Oakwood, Shenandoah, Potomac Dr., Mt. Vernon, Oakwood, Willys Parkway and Olds Pavement, from S. Kaplan & Co., Salisbury Rd., **$70,054,** est. $74,193.

●Pennsylvania—State Hy. Dpt., Harrisburg, Sept. 9, Schedule 1, construct divided hy. of c. conc. paving, incl. rein.-con. box, c. conc. paving for ent. and bound. ramps and from existing pavement by c. conc. and/or earth divisor; divided hy. consisting bit. surf. c conc. base wid'n.; rein.-con. paving, exten. 2 structures, grading, drainage 21.689 ft., Schedule 2, divided hy. reinforcement incl. constructing 5 rein.-con. structures and construct rein.-con. bridge, grading and drainage 23,140 ft., U. S. T. R. 22 from Lebanon-Berks Co. line easterly through Bethel and beyond intersection of L. R. 3016, Berks Co., from C. W. Good, Inc., 726 Columbia Ave., Lancaster, **$1,774,159.**

construct divided hy. of rein.-con. pavement; rein.-con. paving, bit. surf., crushed aggregate base; one plate girder and I-beam bridge and 2 I-beam bridges, bit. surf. for temporary paving railroad crossings on Route 289, R. 289 Parallel and R. 41006; construct c. conc. paving, bit. surf. crushed aggregate base; 2 I-beam bridges and drainage all on ramps and connecting city and boro streets off route, 7.785 ft. T. R. U. S. 15 over west branch of Susquehanna River between Williamsport and South Williamsport, Lycoming Co., from George Vang, Inc., 623 Grant Bldg., Pittsburgh, **$2,464,455*****bit. surf., c. conc. base and crushed aggregate base, surf. bridge floors, incl. exten. 5 structures with bit. surf. 67,120 ft. L. R. 218 (2R), T. R. 208 from village of Barkleyville to point 2.21 mi. northeasterly, Fayette Co., from John B. Schultz Contg. Co., Inc., 316 Crestwood Ave., Buffalo 16, N. Y., **$725,-961.**

c. conc., bit. 4,937 ft. L. R. 443, Sect. 13; 157, Sect. 21, T. R. 22, 29 and 309 on Tilghman St., Lehigh Co., from Collins & Maxwell, Inc., Easton, **$159,854*****bit. surf., c. conc. and crushed aggregate base wid'n.; exten. and/or repairing 7 concrete structures 48,583 ft. L. R. 141, Sect. 3, 140, Sect. 7, T. R. 72 and 443 from point 2 mi. south of village of Lickdale to Lebanon-Schuylkill Co. line, Lebanon Co., from Allegheny Asphalt & Paving Co., Inc., 801 Bingham St., Pittsburg Zone 3, **$495,887*****bit. surf., crushed aggregate base of divided hy. incl. rein.-con. structure, c. conc. paving 4,991 ft. L. R. 197 (4); 06146 (1), T. R. 73 and 134, Berks Co., from Rosser Constr. Co., P. O. Box 72, Mount Joy, **$151,-061*****bit. on crushed aggregate surf., incl. one rein.-con. structure, one I-beam bridge and bit. surf. for approach adjustment, 14,610 ft. L. R. 231, Sect. 2, T. R. 116 from near McSherrystown Boro westerly, Adams Co., from Donald B. Stabler, 1 Buehmon Lane, Harrisburg, **$338,221.** CD 8/19 and 8/10.

Texas—State Hy. Dpt., Austin, cancelled bids to have been opened September 21, flexible base, hot mix conc. 1.79 mi. Hy. U. S. 33 and State 117, from Cuero to Kiowa St. to S. 14 th Ave. on U. S. 83 and from Main St. to east city limits on State 117 in Perryton, Control No. C 30-1-10, C 30-2-12 and C 353-3-12. CD 9/1.

Tex., Canton — Van Zandt Co., c/o Tom E. Johnson, judge, Canton, Sept. 9, road clearing, grubbing, grading, drainage structures, oil base and asph. surf. 9.17 mi. Road 133 and 5.56 mi. Road 238, from Dew Constr. Co., Tyler, **$76,190** est. $120,000 and **$61,415** est. $75,000 respectively. CD 8/31.

Tex., Seminole — Gaines Co., Courthouse, Sept. 6, 16½ mi. road work, base and asph. surf., from Ernest Loyd, 3104 Wayside St., Fort Worth. **$79,234.** Est. $175,000. CD 8/29.

†Wash., Arlington—Pub. Wks. Officer, 13th Naval Dist., 1611 W. Wheeler St., Seattle, Sept. 9, clearing, grading, draining, surf. 6 mi. road to Wheeler Mountain from Jim Creek Naval communication system, Spec. 23015, for Yards & Docks Annex, Navy Dpt., Arlington, Va., from Funderburk & Peck, Skykomish, **$187,720.** CD 8/24.

†Alaska—Bureau Pub. Roads, General Services Admin., Juneau, Sept. 7, clearing, grading, grubbing, surf. 4.9 mi. Mitkof Hy., Proj. 7-AS-B2, from Reed & Martin, Fairbanks, **$70,596.** CD 9/1.

CONTRACTS AWARDED

●Arkansas — State Hy. Dpt., Little Rock, to Reynolds & Williams, Tyler, Tex., grading, minor drainage structures 3.1 mi. Menifee-Gleason Rd., Hy. 65, Menifee, Conway Co., **$96,036;** bit 6.9 mi. Rector-East Rd., Clary Co., **$106,786;** road work 8.8 mi. Little Missouri River, Gurdon Rd., Gurdon, Clark Co., **$358,266*****to Graves Brothers Constr. Co., Pine Bluff, road work 8.6 mi. Mellwood-White River Levee Rd., Mellwood, Phillips Co., **$130,330;** 7 mi. and 2 concrete, steel bridges, Rosston, Nevada Co. to Johnson & Co., Rosston-Emerson-East and North Rd., Lodges Corner, Arkansas Co., **$63,711*****to Central Arkansas Constr. Co., Benton, road work 7.1 mi. Monette-Missouri State Line Rd., Monette, Craighead Co., **$79,298;** 12.6 mi. Pangburn-Heber Springs Rd., Pangburn, Cleburne and White Counties, **$97,034*****to Campbell Constr. Co., Wallace Bldg., Little Rock, road work 6.1 mi. Melbourne—Brockwell Rd., Melbourne, Izard Co., **$147,711;** road work 7.5 mi. Batesville-Sulphur Rock Rd., Batesville, Independence Co., **$154,635*****to McClinton Brs. Constr. Co., Little Rock, road work 5.9 mi. between Huntsville and Henderson Creek, Huntsville, Madison Co., **$137,718*****to Clark Bros. Constr. Co., First Federal S & L Bldg., Jackson, Miss., street wid'n. 1.6 mi. in Texarkana, Miller Co., **$322,718*****to Southeast Constr. Co., 127½ Main St., Pine Bluff, road work 5.3 mi bet'ween Jasper and Sets, Jasper, Newton, Co., **$185,308*****to D. F. Jones Constr. Co., Southern National Bldg., Little Rock, 12.6 mi. Greenbrier Quitman Rd., Faulkner Co., **$196,532.** Grand total 2,257,239. Bids 9/9. CD 9/1.

California—State Div. Hys., State Bldg., Los Angeles, wid'n. roadbed, grading, shoulders, place crusher run base, surf. existing pavement and crushed run base with plant mix surf. apply bit. to borders 3.12 mi. Orangethorp Ave., Orange Co., to Sully-Miller Co., 1500 W. 7 St., Long Beach, **$119,000.** Bids 8/4. CD 7/14.

Ia., Manchester — Bd. Supervs., Delaware Co., Manchester, surf. various secondary roads, Delaware Co., to Lanning Limestone Co., Marion Ia., **$108,400.** Henry Klaus, co. engr.

Kansas — State Hy. Dpt., Kansas City, c. conc. 0.377 mi. S. P. 75-70 F 264 (14), Osage Co., and c. conc. 1.127 mi. S. P. 75-89 F 99 (3), Shawnee Co., to T. F. Marbut, Emporia, **$194,400.** CD 8/23.

Kansas—State Hy. Dpt., Kansas City, Kan., grading, c. conc. 0.551 mi. Project 24-89 FI 58 (13), Shawnee Co., to Kaw Paving Co., Inc., and Topeka Sts., Topeka, **$113,906.** CD 8/23.

Massachusetts — Commonwealth of Massachusetts, Dpt. P. Wks., Boston, highway construction Barnstable to Campanella & Cardi Constr. Co., 780 Jefferson Blvd., Warwick, R. I., **$832,250.** Bids 8/16, awarded 8/25. CD 8/29, under LB.

Minnesota—State Hy. Dpt., St. Paul, grav. and plant mix bit. 12.4 mi. S. P. 7320-14 (TH 152-129), to Alexander Constr. Co., 2631 Hiawatha St., Minneapolis, **$97,694.** Bids 8/26. CD 9/1, under LB.

Nevada—State Hy. Dpt., Carson City, highway imprvt. on Ault man St. in city of Ely from 1 to 11 Sts., also from ½ mi. north of East Ely city limits to McGill, White Pine Co., to Silver State Constr. Co., S. Main St., Fallon, **$210,981.** Bids 8/8. CD 8/29.

●New Mexico—Bureau Public Roads, General Services Admin., 254 New Customhouse, Denver, Colo., tunnel and portal, incl. gunite, tunnel lining, pavement and portal construction 0.098 mi. N. M. Forest Proj. 35-D3, Alamogordo and Cloudcroft, Otero Co., to Henry Thygesen, Albuquerque, **$76,504.**

●N. M., Albuquerque—U. S. Eng., P. O. Box 1538, Aug. 31, AEC pavement and drainage at Sandia Base, Serial No. 299-50-9, to J. W. Jones, 448 S. Wyoming St., **$81,784.** Bids 8/31. CD 8/23.

Okla., Tulsa—City, City Hall, wid'n. Boulder Ave. from Easton to Haskell Sts., to Standard Paving Co., 2119 E. 11 St. **$92,770** est $95,000*** grading, c. conc. Elgin, Cincinnatti and Oklahoma Aves. and grading, c. conc. parts of Elgin, Frankfort and Newton Sts., to C. L. Cunningham, 1349 Gary Pl., **$85,120** est $84,400 and **$84,907** est $87,000 respectively. Grand total $262,797. Bids 8/19, awarded 9/2. W. R. Wooten, city engr.

●Pennsylvania — Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg, grading, drainage, structures and paving 1.665 mi. Sect. 21A-1, Philadelphia Exten. of Pennsylvania Turnpike from point approx. 3.314 ft. west of L. R. 34, easterly 8,790 ft. to point approx. 156 ft. east of L. R. 201011, Cumberland Co., to Frank Mashuda, William Penn Hotel, Pittsburgh, **$1,319,893.** Bids 8/17, awarded 9/7. CD 8/23, under LB.

●Pennsylvania — Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg, grading, drainage, structures, paving approx. 3.24 mi. Sect. 22 B, Philadelphia Exten. of Pennsylvania Turnpike from approx. 897 ft. west of L. R. 129 in Steelton and Highspire Boros, easterly for 17,101 ft. to approx. 1,162 ft. west of

L. R. 618 in Lower Swatara Twp., Dauphin Co. to Frank O. Patterson Constr. Co., Monongahela, **$1,849,199.** Bids 8/24, awarded 9/7. CD 8/29, under LB.

●**Pennsylvania** — Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg, grading, drainage structures, paving 4.62 mi. Sect. 27A, Philadelphia Exten. of Turnpike from point approx. 731 ft. west of L. R. 15144 easterly to point approx. 800 ft. east of Twp. Rd. 424, Chester Co., and grading, drainage, structures, paving 3.8 mi. Sect. 26C, Philadelphia Exten. of Turnpike from point approx. 85 ft. east of Twp. Rd. 306 easterly to point approx. 731 ft. west of L. R. 15144, Berks and Chester Counties, to C. J. Langenfelder Co., 8427 Pulaski Hy., Baltimore, Md., **$3,707,788;** grading, drainage structures paving 6.43 mi. Sect. 26B, Philadelphia Exten. of Turnpike from point approx. 300 ft. west of Twp. Road 823 easterly to point approx. 85 ft. east of Twp. Rd. 306, Lancaster and Berks Counties, to Loyalhanna Constr. Co., 25 E. Main St., Carnegie, Pittsburgh, **$2,797,356.** Bids 8/31, awarded 9/7. CD 9/6 under LB.

Tennessee—State Hy. Dpt., Nashville, grav. incl. 12 bridges on State Hy. 76, Haywood Co., to C. F. Rice Constr. Co., 217 13 Ave. N., Nashville, **$571,628.** Bids 8/26. CD 9/1.

Tex., Baytown—Baytown Constr. Co., c/o B. F. Sturman, Sterling Bldg., Houston, street constr. and asph. paving, to Vernon L. Miller, 1st Natl. Bank Bldg., Houston. Approx. **$60,000.** CD 8/25.

Tex., Ladonia—Ladonia Road Dist., Fannin Co., Ladonia, repairing and rebuilding farm-to-market roads, force account Approx. **$70,000.**

Tex., Longview — Gregg Co., c/o judge, Courthouse, Longview, road reconstruction, drainage, Precinct 2. Approx. **$50,000*****road grading, surf., Precinct 2, **$75,000*****road constr. and surf., Approx. **$55,000*****road reconstruction, drainage, surf., Precinct 4, Approx. **$60,000,** force account. Grand total $240,000. CD 7/9.

Tex., Mathis—San Patricio County Road Dist. 4, Mathis, farm-to-market road constr. and surf., force account, **$110,000.**

Tex., Newton—Newton County Road Dist. 4, Newton, general road repairs, surf., force account **$65,000.** CD 7/28.

Tex., Seguin — Guadalupe Co., c/o judge, Courthouse, farm-to-market road constr., force account, **$75,000.** CD 8/28/47.

Utah—State Road Comn., Salt Lake City, graded and drained roadway 22.163 mi. between Scipio and Levan, 68**,**000 cu. yd. unclass. excav.; 144,200 cu. yd. selected base course material, FAP Nos. F) 67 (3) and F0-283 (1), Juab and Millard Counties, to W. W. Clyde & Co., Springville, **$462,907.** Est. $538,988. Bids 9/6. CD 8/24.

Wash., Seattle — City, County-City Bldg., Zone 4, grading 9 Ave. S.W., to Scarsella Bros., 14618 29 Ave. S., **$132,711.** Est. **$141,320.** Bids 9/7. CD 9/1.

Wash., Seattle—University of Washington, 15 Ave. N.E. and E. 40 St., Zone 5, paving 51,352 sq. yd. streets, parking areas and pathways, to Washington Asphalt Co., 309 W. 39 St., **$82,003.**

British Columbia—Province of British Columbia, Parliament Bldgs., Victoria, reconstruct 11.08 mi. Westwold-Falkland sect. of Kamloops-Vernon Rd., to General Constr. Co., Ltd., Granville Island, Vancouver, **$259,225.** Bids 8/30, awarded 9/6. CD 9/9, under LB.

Ont., Clinton—City Council, Clinton, c. conc. Main St., to Brennan Paving Co., 460 Gage Ave., Hamilton. Approx. **$50,000.** Roy Patterson, c/o owner, engr.

Ont., Sornia—City, Miss M. D. Stewart, city clk., City Hall, c. conc. various city streets, to F. A. Stonehouse & Son, 1763½ Christina St. N. Approx **$95,917.** W. G. Greenwood, c/o owner, engr. CD 3/29.

Ont., Toronto—City, H. E. McCallum, mayor, City Hall, c. conc. Clifton Rd. from 200 ft. south of Elm Ave. to 250 ft. north of South Dr., to Commission of Works, City Hall, Toronto. Approx. **$77,918.** M. Stewart, c/o owner, engr.

EARTHWORK, WATERWAYS

BIDS ASKED

September 27

†Arkansas—U. S. Eng., P. O. Box 60, Vicksburg, Miss., mattress revetment, Arkansas River, Item R-65, N-L, Little Bayou Meto, pile dike construction, Arkansas River, Item D-62, 7A-4, Middle Cummins Bend, and Item D-60-D-L, Hannaberry Lake; revetment maintenance Arkansas River, Item R-52-9-L, Big Bayou Meto, Serial No. CIVENG-22-052-59-41.

†Missouri—U. S. Eng., 1709 Jackson St., Omaha, Neb., agricultural levee unit L 550, near Rockport, Atchison Co. Serial No. CIVENG-25-066-50-32.

†Virginia—U. S. Eng., foot of Front St., Norfolk, intake gates, frames and guides, Philpott Dam, Smith River, Serial No. CIVENG-44-110-6022.

September 28

†Arkansas—U. S. Eng., foot of Prytania St., New Orleans, La., approx. 195,000 cu. yd. semi-compacted earthwork on Red River Levees, Inv. 50-61, Lafayette Co.

B. C., Qualicum Beach—Secy., c/o Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., boat harbour, Approx. $75,000. Plans deposit **$10.** R. Blais, c/o owner, engr.

N. S., Ballantynes Cove—Secy., c/o Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., breakwater repairs, Approx. $50,000. Plans deposit $10. R. Blais, c/o owner, engr.

N. S., Kings Bay—Secy., c/o Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., breakwater replacement, Approx. $65,000. Plans deposit $10. R. Blais, c/o owner, engr.

About September 29

†North Dakota—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul 1, Minn., channel clearing and snagging, Park River, from west limits of city of Park River, to the dam below U. S. Hy. 81 in city of Grafton, Walsh Co.

On or About September 29

†Mississippi — U. S. Eng., P. O. Box 60, Vicksburg, frame retards, left (east) bank Mississippi River, Burke Landing, river mile 632 above head of passes, about 12 mi. west of Clarksdale, Coahoma Co., Serial No. CIVENG 40-041-50-33.

September 29

†Mississippi—U. S. Eng., P. O. Box 97, Memphis, Tenn., triangular frame retards on left (east) bank of Mississippi River, Invitation Serial No. CIVENG-40-041-50-33.

†South Carolina—U. S. Eng., Customhouse, Charleston, maintenance dredging in Shem Creek channel and Turning Basin, Charleston Harbor, Serial No. CIVENG-38-081-50-6.

†Texas—U. S. Eng., 606 Santa Fe Bldg., Galvestoff, dredging 3,500,000 cu. yd. material Gulf Intracostal Waterway, tributary channel to Arkansas Pass, incl. Turning Basin, Inv. No. CIVENG-40-243-50-47.

October 3

†Washington—Bureau Reclamation, Dpt. Interior, 202 N. 4 Ave., Yakima, earth and concrete work for Roza Switchyard, Spec. R1-54. H. R. Nelson, regional dir.

October 4

†Nebraska—Bureau Reclamation, Dpt. Interior, Superior, residence, 2 car garage, pump house, water supply sys., sewage disposal sys. for Government field construction facilities at Superior-Courtland Diversion Dam, Bostwick Div. Spec. R7-86 (Region 7), Missouri River Basin Proj. Plans deposit 50c.

†Oregon—U. S. Eng., 628 Pittock Block, Portland. Zone 5, dredging upper 10½ mi. main ship channel in Coos Bay, also an anchorage basin and 2 turning basins, rear miles 7, 12 and 15, Serial No. CIVENG-35-026-50-86.

†Utah—Bureau Reclamation, Dpt. Interior, Salt Lake City, earthwork, canal lining, Marshall flume revision and protective fencing, Provo Canal enlargement, near Provo, Spec. R4-19 (Provo River Proj.

†Washington—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver,✓Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Ohlar, Wash., misc. structural steel and aluminum louvers for filter house at Grand Coulee Pumping Plant, Columbia Basin Proj., Spec. 2785. L. N. McClellan, c/o owner, ch. engr.

October 6

†Louisiana—U. S. Eng., P. O. Box 60, Vicksburg, 9,000 cu. yd. earthwork on west bank Mississippi River, Millikens Bend Riverside Berm and levee repair, Item 447-R, Stations 2638 plus 61, 2639 plus 66, 4,500 cu. yd. levee excav. and 4,500 cu. yd levee reconstruction, Serial No. CIVENG-22-052-50-40.

†Maryland and West Virginia—U. S. Eng., First and Douglas Sts. N.W., Wash., D. C., Group 2, pressure conduits, sewers, local flood protection proj., Cumberland, Md. and Ridgley, W. Va., Serial No. CIVENG-49-080-50-15.

About October 10

Missouri—Monarch-Chesterfield Levee Dist., c/o Co. Bd. Supervs., E. J. Beyer, chn., Chesterfield, raising, strengthening levees along Missouri River, western part St. Louis Co., area bounded by Chicago, Rock Island & Pacific R. R. tracks, on south, Missouri River on west and north and Bonhomme Creek on east. E. P. Kronsberg, c/o Clayton Surveying & Eng. Co., 26-28 S. Central Ave., Clayton, St. Louis, Zone 5, engr. CD 5/27/47.

About November 1

†North Dakota—U. S. Eng., Fort Lincoln, P. O. Box 300, Bismarck, excavation and main embankment, Stage III, Garrison Dam and Reservoir, Riverdale, on Missouri River approx. 75 mi. northwest of Bismarck; 65 mi. southwest of Minot, and 4 mi. west of Underwood. Serial No. CIVENG-32-015-50-16. CD 6/1/44.

LOW BIDDERS

†Arkansas—U. S. Eng., P. O. Box 97, Memphis, Tenn., placing approx. 460,000 cu. yd. earthwork, White River Levee Dist. Augusta to Clarendon Proj., CIVENG-40-041-50-11, from Claud Leigh Constr. Co., Morrilton, **$82,340.** Est. $111,274. CD 8/11.

†Idaho—Bureau Reclamation, Dpt. Interior, Cascade, Aug. 31, earthwork, structures, surf. and relocating county roads, Cascade Reservoir, Payette Div., Boise, Proj., approx. 12 mi. northwest of Cascade, Valley Co., Spec. 2752, from Morgan Constr. Co., New Meadows, **$107,647.** CD 8/4, under Streets & Roads.

†Ill., Chicago—U. S. Eng., 520 Merchandise Mart, Zone 54, Aug. 30, repairing approx. 1,250 lin. ft. Shore Arm Exten. Exterior Breakwater, Chicago Harbor, Serial No. CIVENG-11-032-50-2, from Harry A. Thompson, Inc., 228 N. La Salle St., **$198,020.** Est. $190,344. CD 8/15.

†Iowa, South Dakota and Nebraska—U. S. Eng., 1709 Jackson St., Omaha, 2, Neb., river and harbor work, McCook Lake-Upper Sioux City Bends, Woodbury Co., Ia., Union Co., S. D. and Dakota Co., Neb. approx. 7 mi. upstream from Sioux City, Ia., Serial No. CIVENG 25-065-50-6, from W. P. McGeorge Jr., Box 995, Pine Bluff, Ark., **$280,044.** Est. $271,727. CD 8/5.

Ia., Des Moines—State Conservation Comn., 914 Grand St., Sept. 2, dam, appurtenances Geode State Park, Des Moines and Henry Counties, from John B. Abramson Constr. Co., 720 Savings & Loan Bldg., **$375,114.** CD 8/24.

†Kentucky—U. S. Eng., P. O. Box 97, Memphis, 1, Tenn., Aug. 25, triangular frame retards, east bank of Mississippi River, river mile 913 above head of passes, approx. 10 mi. west of Hickman, Fulton Co., Serial No. Eng. 40-041-50-13, from Hough Cowgur & Co., Inc., 320 N. Fourth St., St. Louis 2, Mo., **$239,840.** Est. $165,874. CD 8/4.

†Montana—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., Sept. 1, four 13.5 ft. by 18.93 ft. fixed wheel gates for penstocks, Hungry Horse Dam, Hungry Horse Proj., Spec. 2749, from Bethlehem Steel Co., 20 and Illinois Sts., San Francisco, Calif., **$144,623.** CD 8/2.

†New Jersey—U. S. Eng., 120 Wall St., New York, N. Y., maintenance dredging Passaic River, Center St. Bridge to north end Nairn Linoleum Works, CIVENG-30-075-50-13, from Great Lakes Dredge & Dock Co., 100 Battery Pl., New York, 4, N. Y., **$398,810.** Est. $332,045. CD 8/19.

†Ohio—U. S. Eng., Madison Ave. and 8 St. W., Huntington, W. Va., Aug. 23, Pumping Station 1, 3, 7, 8, 9, 10, 11 and 12, Portsmouth-New Boston, Ohio Local Protection Proj., CIVENG-460-022-50-23, from J. M. Foster & Co., 4705 W. 5 Ave., Gary, Ind., **$127,618.** Est. $134,826. CD 8/9.

●**†South Dakota**—U. S. Eng., 1709 Jackson St., Omaha, Nev., Aug. 26, intake gates for Fort Randall Dam, near Lake Andes, Serial No. Eng-25-066-59-253, from Northeastern Boiler & Welding, Ltd., Green Bay, Wis., **$1,662,425.** CD 8/16.

British Columbia—Province of British Columbia, Parliament Bldgs., Victoria, Aug. 30, river bank protection work, Misslon Creek, Kelowna, from Interior Contrg. Co. Ltd., Penticton. **$52,000.** CD 8/22.

CONTRACTS AWARDED

Calif., San Diego—City, 1600 Pacific Hy., dredging 1,896,128 cu. yd. harbor, to Frank Dredging Co. & Guy F. Atkinson Co., Box 259, Long Beach, **$642,247.** Est. $500,000. Bids 9/1, award 9/6 or 9/7, under LB.

Calif., San Francisco—Bd. State Harbor Comrs., Ferry Bldg., fender lines and decks adjacent to Car Ferry Slip at Pier 36 on waterfront, to Le Roeuf & Dougherty, 3 and Curtis Blvd., Richmond, **$53,707.** Bids 9/7. CD 8/23.

Neb., Wisner—Wisner Drainage Dist., Wisner, pilot channel, to J. R. Cartmell, Onawa, Ia., **$39,114.** Bids 9/2. CD 8/18.

N. J., Clifton—Agnes Lynch Hall, widening, deepening, imprv. Weasel Brook, to Union Bldg. & Constr. Co., 631 Main Ave., Passaic, **$195,435.** Bids 8/16. CD 7/28.

N. Y., Yonkers—Eng., 120 Wall St., New York, Zone 5, approx. 29,000 cu. yd. material from Lake Montauk Harbor, Serial No. CIVENG 30-075-50-18, to The Arundel Corp., Pier 2, Pratt St., Baltimore, Md., **$33,205.** Bids 9/7. CD 8/29.

Tex., Baytown — Baytown Constr. Co., c/o B. F. Sturman, Sterling Bldg., Houston, area grading, site development, drainage, to Vernon L. Miller, 1st Natl. Bank Bldg., Houston, Approx. **$33,000.** CD 8/25.

†West Virginia—U. S. Eng., Madison Ave. and 8 St. W., Huntington, Zone 18, grounds and utilities for Bluestone Dam, Bluestone Reservoir Proj., New River Serial No. CIVENG 46-022-50-11, to Ray N. Hewitt, 1012 Pennsylvania Ave., Charleston, **$117,086.** Est. $113,379. CD 8/2.

AIRPORTS AND AIRBASES

BIDS ASKED

September 29

†Neb., Sidney—AIRWAYS STATION—Civil Aeronautics Admin., City Hall, Kansas City, Mo., Interstate Airways Station.

September 30

†Ill., Belleville—FLIGHT HAZARD REMOVAL—U. S. Eng., 5250 Merchandise Mart, Chicago, Zone 54, removal flight hazards, etc., Scott Air Force Base, Serial No. Eng-11-032-50-5. Extended date. CD 8/29.

Pa., Pottstown—AIRPORT — Boro, airport clearing, grading, and drainage, $80,000. Extended date. Gannett Fleming Corddry & Carpenter, Inc., 600 N. 2 St., Harrisburg, engrs. CD 5/12.

October 4

†Wash., Walla Walla—WATER SUPPLY—U. S. Eng., 19 E. Poplar St., exten. water supply sys., Walla Walla Air Base.

October 17

N. Y., Binghamton — ADMINISTRATION BLDG.—At office Howard Davis, clk. Bd. Supervs., Broome County Office Bldg., administration bldg., Broome County Airport. Plans deposit $15. Conrad & Cummings, 99 Collier St., assoc. archts. Seelye, Stevenson & Value, 101 Park Ave., New York, Zone 17, consult. engrs. CD 1/14/47.

LOW BIDDERS

Mass., Worcester — AIRPORT IMPRVS. — City, Mayors Office, City Hall, Sept. 6, South Access Road and fill for I. L. S approach, Municipal Airport, from H. N. Worthington Co., 159 Newport Ave., Quincy, **$84,471.** CD 8/29.

†Mich., Selfridge Air Force Base (br. Mount Clemens)—THEATRE—U. S. Eng., 520 Merchandise Mart, Chicago, Zone 54, Ill., Aug. 19, motion picture theatre, Serial No. Eng. 11-032-50-3, from A. W. Kutsche & Co., 2924 W. Grand Blvd., Detroit, Zone 2, **$224,980.** Est. $195,861. CD 8/2.

N. M., Hobbs — AIRPORT IMPRVS. — Lea Co. Hobbs, Sept. 1, airports imprvs., from Wylie Bros. Box 4025, 3513 E. Central St., Albuquerque, **$101,670.** CD 1/8/45.

R. I., New Shoreham—AIRPORT—State, and F. A. Adams, purch. agt., State House, Providence, airport and road construction, from N. B. King, Inc., 26 Moore St., New London, Conn., **$227,638.**

CONTRACTS AWARDED

Kan., Hutchinson — ADMINISTRATION BLDG.—City, City Hall, general contract administration bldg. at airport, to N. F. English Constr. Co., Inc., Hutchinson, **$161,976.** CD 8/17.

Kan., Hutchinson—AIRPORT—City, City Hall, airport imprv., to J. H. Shears, Inc., Hutchinson, **$130,000.** Bids 8/30. A. R. Campbell, city engr.

Minn., Minneapolis — HANGARS — North West Airways, Plant & Equip. Eng. Div., C. E. Carlberg, engr., 1885 University Ave., St. Paul, general contract 3 concrete hangars, two 175x188 ft. and one 175x200 ft., at Wold-Chamberlain Field, to Barnes-Mattison, 1230 Metropolitan Life Bldg. Approx. **$300,000.** Bids 9/1.

AMERICANS ABROAD

Turkey — Eregli Komurleri Isletnesi Mining Co., Zonguldak, Turkey, new galleries and excavation work on several levels in coal mine, to Gordon Hamilton Contr. Co., Inc., Railway Exchange Bldg., Kansas City, Mo., U. S. A.

LATIN AMERICA

Venezuela—Creole Petroleum Corp., Caracas, housing for Junior Staff Officers and Senior Management Officials, near Amuay, to George F. Driscoll Co., 41 E. 42 St., New York 17, N. Y., U. S. A. **$3,000,000.** CD 8/15/46.

PUBLIC BUILDINGS

BIDS ASKED

In September

Md., Towson — SCHOOL — Bd. Educ. Baltimore Co., Towson, (2nd unit), 2 story, 90x125 ft. rein.con., stone Loch Raven School, Loch Raven Blvd. and Taylor Ave. $300,000. Gaudreau & Gaudreau, 527 N. Charles St., Baltimore, archts. Egli & Gompf, 425 St. Paul Pl., Baltimore, mech. engrs. Faisant & Kocken, 2017 Maryland Ave., Baltimore, structural engrs. CD 6/10.

September 27

Kan., Hope—AUDITORIUM-GYMNASIUM—Bd. Educ., at Office Superintendent Rural High School Dist. 1, Dickinson Co., Hope. Contr. 1, general contract auditorium - gymnasium; Contr. 2, plumbing and heating Contr. 3, electrical work. Plans deposit $15. Wilson & Co., 223 N. Santa Fe St., Salina, engrs. and archts.

September 28

Conn., Milford — SCHOOL — Town, John Foran, supt. Schools, Milford, 1 and 2 story, 55x280 ft., brick, steel 13 classroom school, Kay Ave. $300,000. Plans deposit $25. Jesse James Hamlin, 2188 Main St., Bridgeport, archt. CD 5/13.

Mass., Clinton—HOUSING—Town of Clinton Housing Auth., 242 Church St., frame houses, State Aided Proj., Clinton, 200-L, $250,000. Plans deposit $50. Cornelius W. Buckley, 311 Main St., Worcester, archt., Charles A. Perkins, 198 High St., Clinton, site engr. CD 2/10.

N. Y., Farmingdale—DORMITORIES—New York State Dormitory Auth., 93 State St., Albany, dormitories at Long Island Agricultural & Technical Institute. Plans deposit $25, general, $15 for others. Reisener & Urbahn, 660 Madison Ave., New York, N. Y., archts. CD 9/26/46.

†Wyoming—POWER and CONTROL CABINETS—Bureau Reclamation, Casper, misc. power and control cabinets for Kortes Power Plant, Missouri River Basin.

September 29

●Ky., Middletown — SCHOOL — Jefferson Co. Bd. Educ., 618 W. Jefferson St., Louisville, 3 and 4 story, concrete Eastern High School, $1,000,000. Plans deposit $25. Fred J. Hartstern, Realty Bldg., Louisville, archt.

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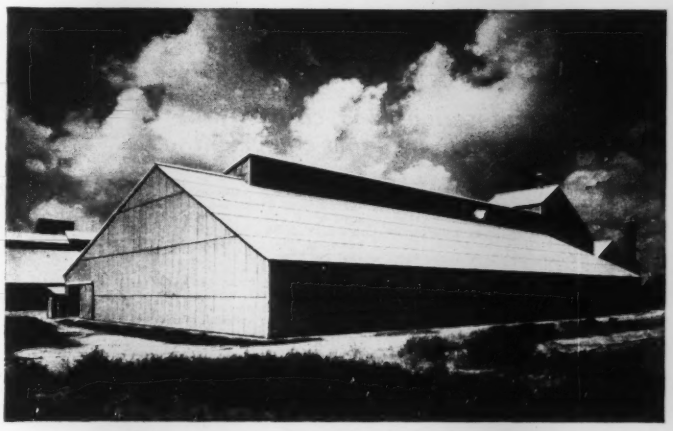

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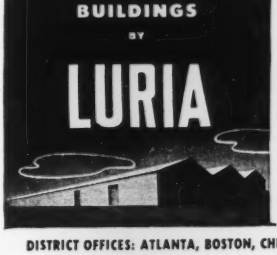

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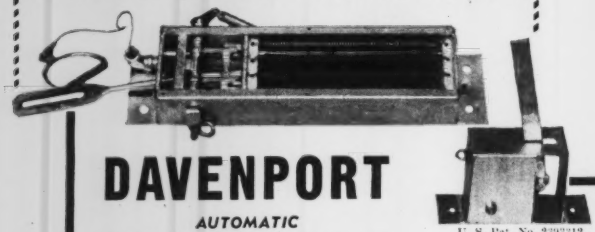

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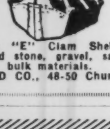

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Mass., Norfolk — SCHOOL — Town, Supt. Schools, Norfolk, brick school, $250,000. Plans deposit $50. M. A. Dyer Co., 8 Beacon St., Boston, archt. CD 7/25.

N. C., Durham—DORMITORY—North Carolina College for Negroes, R. M. Gantt, chn., Durham, dormitory for men. Plans deposit $25. H. Raymond Weeks, Inc., 504 Snow Bldg., Durham, archts. and engr.

†Wyoming — GARAGE — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., one 24-car government storage garage near Casper, Spec. R-7-82 (Region 7). L. N. McClellan, c/o owner, ch engr.

September 30

Calif., El Cerrito — SCHOOL — Richmond Elementary School Dist., 1108 Bissell Ave., Richmond, 1 story, steel, concrete block 12 classroom Miravista School, $420,000. Plans deposit $25. Miller & Warnecke, Financial Center Bldg., Oakland, archts.

B. C., Victoria — OFFICE — S. R. Weston, secy., British Columbia Power Comn., c/o S. R. Weston, secy., 918 Government St., 3 story, approx. 34,000 sq. ft. rein.-con. office. Approx. $300,000. H. Whittaker, 710 Johnson St., archt. CD 7/28.

N. S., Halifax—SCHOOL—H. F. Beganson, secy. Bd. School Comrs., 81 Sackville St., Alexander School. Approx. $300,000. C. A. Fowler & Co., Capitol Bldg., archts. CD 2/11.

About October 1

Miss., Clarksdale — HOUSING — Clarksdale Housing Auth., W. A. McMinn., dir., Clarksdale, 40 houses, $300,000.

Tenn., Dandridge—HIGH SCHOOL—Jefferson Co., Dandridge, 2 story, 37,000 sq. ft. high school. $250,000. Rutherford & Painter, Daylight Bldg., Knoxville, archts.

●Va., Roanoke—State, Richmond, modernizing and enlarging Catawba Sanatorium, near Salem. Approx. $2,000,000. CD 3/18.

October 1

Minn., Owatonna — SCHOOL — Bd. Educ., Owatonna, 3 story school, $450,000. Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, archts. CD 3/28/46.

October 3

Ia., Cedar Falls—POWER PLANT—City, City Hall, power sys. imprvs., incl., Sect. 3, bldg. addn., Sect. 4, mechanical work, Sect. 5, electrical work, Stanley Eng. Co., Hershey Bldg., Muscatine, engr. CD 3/3.

Ore., Salem—CELL BLOCK—Bd. Control, Capitol, 400 unit cell block at state prison, $500,000.

Wash., Zillah—SCHOOL—School Dist. 205, Zillah, frame school, $298,000. Plans deposit $25. W. H. Rothe, 807 W. Yakima Ave., Yakima, archt.

October 4

Calif., Agnew—LAUNDRY—State Div. Architecture, P. Wks. Bldg., Sacramento **(1)** general work **(2)** heating and ventilating **(3)** plumbing and **(4)** electrical work, 1 and 2 story 30,000 sq. ft. rein.-con. laundry bldg. at Agnews State Hospital. Plans deposit $25. Anson Boyd, Sacramento, state archt.

Calif., Santa Cruz — SCHOOL — Santa Cruz Elementary School Dist. 133, Mission St., Bayview Elementary School. Approx. $250,000. Plans deposit $50. Robert Stanton, Carmel, archt.

†Colorado—WAREHOUSE—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., erecting warehouse at Wilds' Spur (Loveland) Colorado Big Thompson Proj., Spec. 2783. L. N. McClellan, ch. engr.

Ga., Atlanta—SCHOOL—City, Rock Springs School. Robert & Co. Assoc., 96 Poplar St., N. W., archts.

N. Y., New York — HOUSING — New York City Housing Auth., 63 Park Row, Zone 7, general contract, heating, electrical and plumbing work for 7 buildings in Group 1 of Stephen Foster Houses Rehabilitation Proj. No. NYS-30-2174. 8 Ave.; 307 W. 114 St.; 309 W. 114 St.; 311 W. 117 St.; 251 W. 123 St.; 59 E. 118 St.; 18 E. 132 St. Plans deposit $25.

October 5

La., Baton Rouge—HOSPITAL—State Div. Admin., Capitol Annex, Baton Rouge, eight 1 story, concrete, brick bldgs., Southeast Louisiana State Hospital, Hdr. 190. Plans deposit $100. Wogan, Bernard & De La Vergne, 427 Carondelet St., New Orleans, archts., Alvin Trombertz, 427 Carondelet St., New Orleans, engr.

La., Thibodaux—SCHOOLS—Lafourche Parish School Bd., Thibodaux, Golden Meadows school, Larose Cut-Off High School, Bayou Blue School and Bayou Boeuf School, Plans deposit $25, each. Wm. R. Burke Assoc., Architects & Engineers, 414 Pan-American Bldg., New Orleans, archts. and engrs. CD 1-10-46.

●Mass., Lowell — HOUSING — City of Lowell Housing Auth., J. McFadden, exec. dir., 582 Market St., 292 unit garden type veterans housing, Gorham St. $2,900,000. Plans deposit $100. Krokyn & Browne, 184 Boylston St., Boston, archts. CD 1/27.

N. Y., Buffalo — RAILROAD STATION — Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, removing terrace railroad station, constructing new station, new signal station, etc. $125,000.

Pa., Clarks Summit — INFIRMARY — Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, general construction; heating and ventilating; plumbing and drainage; electrical; elevators and dumbwaiters renovation infirmary bldg. group at Clarks Summit Hospital. Plans deposit $10 general, $5 each for others. George M. D. Lewis, 445 Kressler Court, Scranton, archt. W. B. Jeffris, c/o owner, ch. engr.

October 6

†N. M., Las Cruces—SUPPLY WAREHOUSE —U. S. Eng., P.O. Box 1538, Albuquerque, supply and warehouse, White Sands Proving Grounds, NAV-910. Serial No. Eng-29-005-50-8. $250,000. CD 8/31.

●N. M., Santa Fe—OFFICE—State, Capitol Bldg., Unit 1, state office. Total est. $4,000,000. W. C. Kruger Co., 71 Sena Plaza, engr. and archt. CD 8/23/45.

October 7

Colo., Denver—RESEARCH—University of Colorado Medical Center, c/o Bd. Regents, Boulder, 5 story, bamnt., L-shaped, 100 ft. and 44x114 ft. cancer research wing. $558,000. Fisher & Fisher, 837 Denver National Bank Bldg., Denver, archts. and engrs. CD 3/28.

October 10

Ga., Atlanta—SHOP—City, shop for Waterworks Dpt., $300,000. Plans deposit $25. Extended date. Tucker & Howell, Rhodes-Haverty Bldg., archts. CD 9/7.

October 11

Ala., Anniston — HIGH SCHOOL — City, Junior High School, $500,000. Pearson, Tittle & Narows, First National Bank Bldg., Montgomery, archts. CD 6/9.

Calif., Stockton—SCHOOL—Stockton Unified School Dist., San Joaquin and Lindsay Sts., 1 story frame, stucco 9 classroom Edison High School wing addn. $335,000. Plans deposit $50. Clowdsley & Whipple, Exchange Bldg., archts. CD 5/11/48.

●Ill., Chicago — HOUSING — Chicago Housing Auth., 343 S. Dearborn St., 121 dwelling unit multiple story apartment housing, relocation Housing Site No. 1, 110 St. and Racine St. Extended date. Perkins & Will, 309 W. Jackson St., Chicago, archts. CD 9/2.

Minn., Worthington—POWER PLANT—City, G. S. Thompson, clk., municipal power plant, steam generation unit, $100,000. Pfeifer & Shultz, 702 Wesley Temple Bldg., Minneapolis, engrs.

October 12

●Tex., Freeport — HIGH SCHOOL etc. — Brazosport Independent School Dist., Freeport, masonry high school, $1,250,000; 75x80 ft. reinf. con. swimming pool, $60,000, Emory S. White, M & M Bldg., Houston, archt. W. P. Moore, 4605 Montrose Blvd., structural engr. Dale S. Cooper & Assoc., 420 Sul Ross St., mechanical engrs. CD 3/24.

About October 17

†N. M., Las Cruces—OFFICERS QUARTERS —U. S. Eng., P. O. Box 1538, Albuquerque, single officers quarters and paint and oil storage bldg., (White Sands Proving Grounds NAV-92, NAV-911), Serial No. Eng-29-005-50-6.

●Fla., Miami—HOSPITAL—Dade Co., Miami, Jackson Memorial Hospital addn. $2,500,000. Steward & Skinner, 223 S.E. First St., archts. CD 2/7.

October 19

Calif., Watsonville—CRAFTS BLDG.—Watsonville Joint Union High School Dist., Watsonville, 4 vocational crafts bldg., $300,000. Plans deposit $5. Robert Stanton, Carmel, archt. CD 4/10/47.

October 20

●Pa., West Chester—SCHOOL—West Chester Combined School Dist., West Chester, high school, $1,600,000. CD 3/25/47.

About October 21

†N. M., Albuquerque—HEATING PLANT— U. S. Eng., P. O. Box 1538, central heating plant, Sandia Base, Serial No. 291-50-07, approx. 1 mi. south of U. S. Hy. 66 and 4 mi. southeast of here.

About November 1

Kan., Smith Center—HOSPITAL—Smith Co., Smith Center, hospital, $300,000. Charles W. & John A. Shaver, 205½ S. Santa Fe St., archts.

November 14

Fla., West Palm Beach—JAIL—Palm Beach Co., West Palm Beach, jail. Approx. $250,000. Extended date. Clarke, Nevins & Scoville, First Federal Bldg., archts. CD 8/19.

About November 15

●†Pa., Pittsburgh — BUILDINGS, Eng., 925 New Federal Bldg., Zone 19, construct buildings incl. administration, general medical and surgical bldg. No. 1; admission and treatment Bldg. No. 2; continued treatment and medical rehabilitation bldg. No. 4; disturbed bldg. No. 5; Infirm bldg. No. 6; central cafeteria and kitchen bldg. No. 7; recreation, library and theater bldg. No. 8; gymnasium and swimming pool bldg. No. 9; chapel No. 10; managers residence, No. 11, staff duplex residences bldgs., No. 12A and 12B; apartment bldg. No. 13; attendants quarters bldg. No. 14, utilities bldg. No. 15, exterior utilities, water, gas, electric, steam and sewers; roads, walks, parking areas, general site grading and landscaping incl. planting of 1,000 bed Veterans Admin. Neuropsychiatric Hospital. Serial No. CIVENG-36-058-50-18 for Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C. Plans deposit $75 for 5 volumes; $100 half-size folio plans; $175 full-scale drawings of 11 volumes. CD 5/28/47.

About January 10

Kan., Ashland — COURTHOUSE — Clark Co., Sidney B. Dorsey, co. clk., Court House, Ashland, 64x139 ft. court house, 28x75 ft. concrete brick sheriffs quarters, $250,000. Glen H. Thomas and A. B. Harris, 125½ N. Topeka St., Wichita, archts. CD 7/21.

LOW BIDDERS

●†Ala., Birmingham—HOSPITAL—U. S. Eng., P.O. Box 1169, Mobile, Zone 7, 500 bed general medical veterans administration hospital, Serial No. CIVENG-01-076-59-13, from Thompson & Street Co., 72 11 St. N.E., Atlanta, Ga., **$5,887,000.** CD 8/5.

†Arizona-Nevada-California — TURBINE — Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Aug. 30, hydraulic turbine with pressure regulator for Unit A-9 Hoover Power Plant, Boulder Canyon Proj., Spec. 2737, from Newport News Shipbuilding & Dry Dock Co., Newport News, Va., **$441,200.** CD 7/19.

Calif., Coachella—SHOP—Coachella Union High School, Sept. 6, 17,000 sq. ft. shop, from Taylor & Kretz, 3590 Buchanan St., Arlington, **$288,900,** Est. $250,000.

Calif., Inglewood — AUDITORIUM — Valley Union High School Dist., Sept. 7, auditorium for Inglewood High School, from Ted F. Merrill, 911 E. Redondo Blvd., Approx. **$250,000.** CD 8/26.

Calif., Oakland—SCHOOL—Bd. Educ., 1025 2 Ave., Sept. 6, 9 classroom Burbank School addn., from Harry K. Jensen, 1025 44 Ave., **$297,777.** CD 8/17.

Conn., Fairfield — SCHOOL — Town, E. H. Staber, chn., School Bldg. Comn., Fairfield, Sept. 9, brick, steel Mill Plain School, 22 rooms, auditorium-gymnasium, etc., from E & F Constr. Co., 94 Wells St., Bridgeport, **$909,000.** CD 8/24.

●Conn., Storrs—DORMITORIES—State, Raymond S. Thatcher, comptroller, State Capitol, Hartford, 7 dormitories for girls, University of Connecticut, Proj. BA-D126, from Frouge Constr. Co., 74 Goodsell St., Bridgeport, **$2,387,000.** CD 8/15.

Idaho, Nampa—DORMITORIES—State Dpt. Pub. Wks., Boise, Sept. 8, 2 story, brick, reinf. con. male and female dormitories, at State Colony, from Intermountain Builders, Caldwell, **$415,810.** CD 8/18.

Mass., Beverly—HOUSING—City of Beverly Housing Auth., 222 Cabot St., Sept. 2, veterans housing, Sam Rd. and Lemon Lock St., from F. C. Dolan & Sons, 18 Aldworth St., Jamaica Plains, **$621,000.** Ray Thibedau, 81 Washington St., Salem, archt. M. A. Reidy, 101 Tremont St., Boston, engr. CD 8/16.

Mass., Leominster — HOUSING — City of Leominster Housing Auth., Leominster, Aug. 31, veterans housing, Proj. 200-1, from B. Perini & Sons, 73 Mountwait Ave., Framingham, **$597,777.** CD 8/10.

Mass., Needham—HOUSING—Town of Needham Housing Auth., 99 School St., Aug. 24, veterans housing, Proj. 200-1, from Bennett-Stewart Co., Inc., 105 Newbury St., Boston, **$627,898;** site imprvs., from West Constr. Co., 119 Land Seer St., West Roxbury, **$83,333.** CD 8/5.

Mass., Quincy — HEALTH CENTER — City, City Hall Annex, Aug. 30, health center, Hancock St. between Johnson Ave. and Woodward School, from James S. Kelliher, 1230 Hancock St., **$379,400.** CD 8/11.

Mass., Walpole—HOUSING—Town of Walpole Housing Auth., 9443 Main St., Aug. 26, 45 unit veterans housing Robinwood-Walpole, from A. F. Ayeleo Constr. Co., 115 Trenton St., Pawtucket, R. I., **$471,800.** CD 8/11.

N. J. Trenton—HOSPITAL—City, City Hall Sept. 8, general contract Donnelly Memorial Hospital addn., Home for Aged wing, from Fowler Thorne Co., 211 N. Montgomery St., Trenton, **$270,500.** CD 8/23.

●N. Y., Hollis—SCHOOL—Supt. School Buildings, Design & Constr., 49 Flatbush Ave. extn., Brooklyn, Zone 1, Sept. 6, general construction P. S. 178, Radnor to Avon Rds. north of 189 St. from Caristo Constr. Co., 26 Court St., Brooklyn, Zone 2, **$1,148,000***** plumbing, from Endres Plumbing Corp., 31-65 29 St., Long Island City, **$94,000***** electrical work, from Dropkin Bros., Inc., 205 Bedford Ave., Brooklyn, Zone 11, **$75,988***** heating, from Daniel J. Rice, Inc., 41-50 38 St., Long Island City, **$139,700.** CD 8/11.

Vt., Manchester — SCHOOL — Manchester School Dpt., G. Randall, town mgr., Manchester, Aug. 17, Central School and Community Center, from Swanbuilt Constr. Corp., 61 Amherst St., **$458,107.** CD 8/8.

Va., Charlottesville — LABORATORIES — State of Virginia, Richmond, Sept. 8, engineering and high voltage laboratories at University of Virginia, kitchen and laundry, from C. E. Main St., Richmond, (A) **$255,451** (B) **$197,-416.** CD 8/11.

Que., Montreal North—SCHOOL—Catholic School Comn., M. Jarry, secy., 117 St. Catherine St. W., Montreal, 2 stor. 65x156 ft., rein.-con., brick school, Ardennes and Ste. Gertrude Sts., Parish of Ste. Gertrude, from Gilles Lapierre, 4900 Cote des Neiges Rd., Montreal, Approx. **$272,231.** J. Sawyer, 1207 Guy St., Montreal, archt.

CONTRACTS AWARDED

†Arizona-California-Nevada — GENERATOR —Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Item 1, furnishing, installing generator for Unit A-9, incl. spare parts, Hoover Power plant, Boulder Canyon Proj., Spec. 2735, to General Electric Co., 650 17 St., Denver, **$920,923.** Bids 8/16, awarded 8/30. CD 7/19.

Calif., Richmond—GYMNASIUM—Richmond High School Dist., 1108 Bissell Ave., rein.-con. gymnasium at Harry Ells Junior High School, to Frank A. Payne & Son, 8 Overhill Rd., Orinda, **$361,700.** Bids 9/2. CD 9/8, under LB.

Colo., Denver — SCHOOL — School Dist. 1, City and Denver Co., 414 14 St., general contract 2 story, L-shaped 44x92 ft. and 85x129 ft. school, to Jack H. Cya Constr. Co., 1745 Federal Blvd., **$485,775.** Bids 8/31, awarded 9/7. CD 9/8, under LB.

Ia., Waterloo — SCHOOL — Bd. Educ., Independent School Dist., c/o Secy., Waterloo, Aug. 30, general contract brick, concrete school, Oregon St., to John G. Miller Constr. Co., 222 W. Mellan St., **$283,940.**

La., Sulphur — SCHOOL — Calcasieu Parish School Bd., c/o contractor Junior High School, to Perilliat-Reisky Constr. Co., 1530 S. Rendon St., New Orleans, **$458,719.** Bids 9/6, CD 8/9.

Mass., Andover—HOUSING—Town of Andover Housing Auth., Town Hall, veterans housing, Project 200-1, Morton St., to Benoit Constr. Co., Inc., 7 Willow St., Lynn, **$546,453.** Bids 8/22, awarded 8/24. CD 8/29, under LB.

Mass., Boston—PARKING STRUCTURE— City of Boston, Real Estate Comn., City Hall Annex, off-street parking structure Unit 1, 150 Essex and 47 Lincoln-Columbia Sts., to C. J. Maney Co., Inc., 24 Dane St., Somerville, **$407,263.** Bids 8/25, awarded 9/2. CD 8/12.

Mass., Lynn — HOUSING — City of Lynn Housing Auth., John Cavanaugh, chn., 58 Andrews St., 48 unit veterans housing, Proj. 200-3, to A. Cefalo & Sons, 42 Bennett St., Lynn, **$544,240.** Bids 8/24, awarded 9/2. CD 8/18.

N. Y., Hempstead — HOUSING — Hempstead Housing Auth., 335 Greenwich St., housing, Parkside Gardens, NYS-31, to John A. Johnson & Sons, Inc., 268 41 St., Brooklyn, Zone 32, **$498,759.** Bids 8/17. CD 7/20.

O., Columbus—HOME IMPRVS.—Franklin Co. Courthouse, general contract north wing, kitchen wing, boiler room, at Franklin County Home, known as Alum Creek Hospital, to Henry A. Hustus, 4049 E. Livingston Ave. Approx. **$365,000.** CD 7/28.

O., Delaware—SCHOOLS—Bd. Educ., Delaware, North and South Schools, to Knowlton Constr. Co., Bellefontaine, **$338,700.** Bids 6/15, awarded 8/19. CD 5/19.

O., Kent—ARTS BLDG., etc.—George A. Bowman, pres. Kent State University, Kent., general contract industrial arts and applied sciences bldg., 3 classroom floors and factory-type sawtooth construction for shops and laboratories, Terrace Dr., to Steinle-Wolfe, Inc., Fremont, **$543,650.**

●Tenn., Chattanooga—HOSPITAL—Hamilton County Memorial Hospital, c/o contractor, hospital, to Thompson & Street, 72 11 St. N.E., Atlanta, Ga., **$1,289,440.** Bids 7/15.

Tenn., Kingsport — SCHOOL — City, Riverview School, to J. E. Myers, Kingsport, **$263,372.** Bids 9/6. CD 8/26.

Tex., Houston—STORAGE—City, City Hall, 900 Brazos St., masonry, concrete, metal equipment storage, concrete slab fdn., own forces. **$75,000.** L. Fugate, city engr.

Va., Pearisburg—HOSPITAL—Giles Memorial Hospital, Pearisburg, Giles Memorial Hospital, to English Constr. Co., Altavista, **$628,700.** Bids 8/10. CD 8/18, under LB.

●Va., Winchester — HOSPITAL — Winchester Memorial Hospital, Winchester, hospital addn., alterations, to English Constr. Co., Altavista, **$2,194,000.** Bids 9/7. CD 8/8.

B. C., Vancouver — DWELLINGS — Central Mortgage & Housing Corp., 360 Homer St., 68 frame dwellings in Fraser View Housing, to Pyke & White Constr. Co. Ltd., 2996 Kingsway, **$410,000.** J. L. Adams, 360 Homer St., engr. Bids 8/17. CD 8/12.

N. B., St. George—HIGH SCHOOL—Bd. School Trustees, St. George, high school to W. G. Usher, St. George, **$300,000.** Allward & Gillies, 1 Market Sq., Saint John, archt.

Ont., Galt—HOUSING—Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, 50 houses, (Galt Proj. L-49) to E. P. A. Constr. Co., 59 Wilson Ave., London, Approx. **$375,000.** A. J. E. Smith, c/o owner, engr. Bids 8/29. CD 8/24.

Que., Arvida — SCHOOL — School Comn., d'Arvida, Y. Mormier, secy., rein.-con. school and residence for girls, for J. W. Flanagan, 74 St. Francis St., Jonquiere, Approx. **$469,192.** Desagne & Bailleau, 181 Racine St., Chicoutimi, archts. CD 4/28.

Que., Chicoutimi — HOUSING — Central Mortgage & Housing Corp., 1253 McGill College Ave., Montreal, 28 duplex houses, to G. Archambault, Ltd., 726 Atwater Ave., Montreal, Approx. **$300,000.** Bids 7/5. CD 6/17.

Que., Montreal — SUB-STATION — Hydro Commission of Quebec, 107 Craig W., sub station extens., to Collet Bros. Ltd., 1978 Parthenais St., **$175,000.**

Que., Montreal—COMFORT STATION— Municipality, comfort station to Rochon & Parent Co. Ltd., 5000 13 Ave., Montreal, **$135,-000.** H. A. Giheau, city engr.

Que., Val d'Or—HOUSING—Central Mortgage & Housing Corp., 1253 McGill College Ave., Montreal, 44 semidetached duplexes

(Val D'Or Proj. 1-49), to Paguin Constr. Co. Ltd., 187 Troisieme Ave., Approx. **$450,000.** Bids 8/2. CD 7/18.

COMMERCIAL BUILDINGS

BIDS ASKED

September 30

S. C., Spartanburg—DORMITORY—Wofford College, Spartanburg, (selected list of bidders) dormitory. Lockwood Green Engineers, Inc., Spartanburg, archt.

Tenn., Maryville—FINE ARTS COLLEGE—Maryville College, Maryville, fine arts college, $360,000 Schweikher & Elting, Meachen Rd., Chicago, Ill., archts. CD 11/24/47.

After October 1

Ill., Belleville—RETREAT BLDGS.—Kings House of Retreats for Belleville Diocese of Catholic Church, c/o Oliver L. Parks, Parks Aircraft Sales and Service Co., E. St. Louis, chn., and Oblate Fathers, Rev. Alphonse Simon, O.M.I. dir., St. Henrys Seminary, 5901 W. Main St., dormitory, refectory, chapel., etc., Laymens Retreat Institution, 42 acre site, Five Hills Acres, between N. 66 and N. 68 Sts., $500,000. Paul J. Saunders, Chemical Bldg., 721 Olive St., St. Louis, Mo., and Eugene S. Johnson, Murphy Bldg., E. St. Louis, archts. CD 8/31/48.

October 4

Mo., Springfield — CHURCH — First Baptist Church, South & Elm Sts., church, $400,000. W. T. & R. W. Vahlberg, 1517 N. Broadway, Oklahoma City, Okla., archts. CD 12/21/48.

October 5

S. C., Columbia—OFFICE—Carolina Life Insurance Co., c/o Lafaye, Lafaye & Fair, archts., 1226 Sumter St., office. Approx. $250,000.

Wis., Burlington — HOSPITAL — Memorial Hospital Assn., Burlington, 2 story, bsmnt., 2 wings 44x60 ft. steel brick hospital addn., remodeling, concrete fdn. and floors, $446,000. Plans deposit $15. G. J. De Gelleke, 152 W. Wisconsin Ave., Milwaukee, Zone 3, archt. CD 5/31/45.

October 6

●**Wyo., Cheyenne** — HOSPITAL — Sisters of Charity of Leavenworth, Kansas, Mother Frances I. O'Shea, Xavier, Kan., 4 story, bsmnt., wings, 33x220 ft. hospital, $2,000,000. John K. Monroe, 400 Security Bldg., Denver, Colo., archt. and engr. CD 11/29/48.

October 10

●**Kan., Kansas City** — HOTEL — Wyandotte Hotel Co., 3552 Wood St., hotel, $5,000,000. E. J. Stern, 20 W. 9 St., archt. CD 8/8/6.

October 18

Ark., Blytheville — SANCTUARY — First Methodist Church, Blytheville, 3 story., bsmnt. sanctuary, L. S. Branson, Blytheville, archt. CD 3/25/48.

About November 1

Ill., Carlinville — HOSPITAL — Carlinville Hospital Assn., Carlinville, 3 story, brick, concrete, steel hospital, Approx. $820,000. Tunnicoff, Townsend & Assoc., 351 E. Ohio St., Chicago, Zone 11, archts. and engrs. CD 4/20, under Public Bldgs.

November 1

●**Tex., El Paso** — HOSPITAL, etc. — Province Memorial Hospital, Dr. J. J. Evans, dist. supt., El Paso, 6 story, bsmnt., steel, concrete memorial hospital and nurses home, $2,000,000. Extended date, Carroll & Daeuble, 1001 E. Yandell Blvd., archts. CD 6/14.

Bids Asked

●**Tex., Dallas** — SHOPPING VILLAGE — S. & E. Corp., Box 2392, 1 and 2 story, 242,000 sq. ft. masonry shopping village, $1,750,000, grading for site development and park, paving area for 1,000 autos, $100,000. Consolidated Architects & Engineers, 1005 Fort Worth Natl. Bank Bldg., Fort Worth, engrs. and archts. CD 8/24.

SOON LETS CONTRACT

Ala., Birmingham — CHURCH — Mountain Brook Baptist Church c/o Geo. P. Turner, archt., American Life Bldg., soon lets contract church

Calif., San Mateo — CLINIC — San Mateo Clinic, 2 Ave., soon lets contract 2 story San Mateo Clinic, with 1 story wings, $250,000. Kingsford Jones & W. Simrell, Jr., 1955 El Camino Real, Palo Alto, archts.

Ind., Tipton—SCHOOL—St. John the Baptist Church, Tipton, soon lets contract parochial school T. G. Medland, 216½ 4 St., Logansport, archt. CD 9/6.

Ky., Berea—DORMITORY—Berea College, Berea, soon lets contract 3 story women's dormitory, Charles F. Cellarius, 111 E. 4 St., Cincinnati, O., archt.

Mass., Boston — HOSPITAL — Peter Bent Brigham Hospital, 721 Huntington Ave., soon lets contract hospital alterations, addns. Approx. $250,000. Marcus & Necka, 251 Columbus Ave., archts. CD 8/29.

N. H., Manchester — SCHOOL — Blessed Sacrament Parish, c/o Fr. Dec. 14 Elm St., soon lets contract 3 story brick parochial school, Queen City and Elm Sts. Approx. $250,000. Provost & Wright, Inc., 61 Amherst St., archt.

N. M., Santa Fe—HOTEL—Santa Fe Land Improvement Co., 80 E. Jackson Ave., Chicago 4, Ill., soon lets contract 70 room La Fonda Hotel addn. $550,000. Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., archts. CD 9/9.

O., East Liverpool—CHURCH—First Church of the Nazarene, East Liverpool, soon lets contract church, **$250,000.**

September 27

Tex., Bryan — CHURCH — College Avenue Baptist Church, Bryan, soon lets contract church. $275,000. Norton & Mayfield, 1505 S. College Ave., archts. Lockwood & Andress, Union Natl. Bank Bldg., Houston, engrs. CD 8/16.

Tex., Houston — OFFICE — DeLang Office Building Co., 4009 Center St., soon lets contract 4 story, 20,000 sq. ft., steel, brick, hollow tile office, $250,000. Northrup & Northrup, 4009 Center St., archts.

Tex., Houston — COMMUNITY CENTER — Jewish Community Center, 4701 Caroline St., soon lets contract Jewish Community Center, $350,000. L. Gabert, 1313 Bell Ave., archt. Walter P. Moore, 4605 Montrose St., engr. I. A. Naaman, 1309 Anita St., mechanical engr. CD 6/21, under LB.

Tex., Sherman — ACADEMY — St. Joseph's Academy, Sherman, soon lets contract 2 story, 87x106 ft., structural steel, masonry academy bldg., concrete pier and beam fdn. $250,000. Brown & Chapman, 206 Lake Blvd., archts.

Vt., Montpelier — HOSPITAL WING — Heaton Hospital, c/o Dr. E. A. Colton, pres., Seminary Hill, soon lets contract hospital wing at nurses home, etc. $300,000. Ebbets Frid & Prentice, 862 Asylum St., Hartford, Conn., archts. CD 11/29/48.

LOW BIDDERS

Ga., Atlanta—RESEARCH—Georgia Institute of Technology, North Ave., Sept. 8, research bldg. addns., alterations, from Dye Constr. Co., 539 Plum St. N. W., **$307,543.** CD 8/16.

Me., Portland—HOSPITAL—Mercy Hospital, 144 State St., Aug. 19, hospital wing addn., from F. W. Cunningham & Sons, 181 State St., **$809,587.** CD 6/16.

N. D., Garrison — HOSPITAL — Garrison Community Hospital Assn., Garrison, Sept. 2, general contract hospital, from John W. Larson, Bismarck, **$258,800.** Rittenbush Bros., Bismarck, archt.

N. D., Minot — BUILDING — Young Mens Christian Assn., Minot Aug. 16, general contract Y.M.C.A. Bldg. from Mackley & Ralston, Minot, **$387,997.** CD 7/14.

Tenn., Memphis—CHURCH—Bellevue Baptist Church, c/o low bidder, Aug. 26, church, from Foster & Creighton Co., American National Bank Bldg., Nashville. Approx. **$900,000.** CD 8/26.

Va., Woodstock — HOSPITAL — Shenandoah Co. Memorial Hospital, Woodstock, Sept. 1, hospital, from Earl L. Crump, 251 Park Ave., Chambersburg, Pa., **$607,649.** CD 8/22.

CONTRACTS AWARDED

Fla., North Miami — HOMES — Boringuen Constr. Co., c/o Charles Meiry, archt., 320 Coral Way, Coral Gables, 40 homes. Owner builds, **$300,000.**

●**Fla., Orlando**—APARTMENT UNITS—Eola Plaza, Inc., c/o contractor, 152 apartment units, to Paul Smith Constr. Co., 310 N. Rome Ave., Tampa, **$1,500,000.**

Fla., St. Petersburg—HOMES—All States Lumber Corp., 1410 First Ave. N., 75 homes. Owner builds, **$600,000.**

Ga., Atlanta — APARTMENT DEVELOPMENT — Stratford Arms Apartments, Inc., c/o contractor, apartment development, to De Give, Dunham & O'Neil, Grand Theater Bldg. Approx. Approx. $ 1/5. CD 7/14.

Ga., Decatur — CHURCH — First Christian Church, c/o Poundstone, Ayers & Godwin, archts., Palmer Bldg., Atlanta, church, to M. G. Aldridge, Macon, **$250,000.** CD 8/29, under LB.

Ind., Fort Wayne—SHOPPING CENTER—George A. Poag & Assoc., 925 Lincoln Bank Tower, shopping center at Anthony Wayne Village Housing development, S. Anthony Blvd. and McKinnie Ave. Owner builds, **$500,000.**

●**Ind., Ft. Wayne** — HOUSING — George A. Poag & Assoc., Old First Bank Bldg., fifty-three 1 story houses, incl. 216 units, known as Village Ranch Homes, Anthony Wayne, Village, S. Anthony Blvd. and McKinnie Ave., **$2,000,000.** Owner builds. CD 10/20/47.

La., New Orleans—HOUSING—Gentilly Gardens Corp., c/o contractor, residential development, to Shelby Constr. Co., 4320 Paris Ave., **$650,000.**

Md., Baltimore — RESIDENCES — Fenwick Corp., c/o Baltimore Equitable Society, 24 three story residences, 3700 to 3753 Lyncale Ave., separate contracts, **$386,000.** Lawrence A. Menefee, 347 N. Charles St., archt.

●**Mo., Kirksville** — HOSPITAL, etc. — Kirksville College of Osteopathy, Kirksville, hospital and clinic bldg., to J. E. Dunn Constr. Co., 929 Holmes St., Kansas City, Mo., **$1,173,616.** Bids 7/21. CD 7/8, under LB.

●**Mont., Billings** — DWELLINGS — Northern Engineering Co., 1410 Broadwater Ave., 5 room frame dwellings. Owner builds, **$600,000.**

●**Mont., Great Falls** — DWELLINGS — Country Club Landowners, Inc., Great Falls, 300 dwellings, approx. **$3,000,000;** apartment, Country Club Towers, **$100,000.** Owner builds.

●**N. Y., Buffalo**—HOSPITAL—Buffalo General Hospital, 100 High St., hospital addns., alterations, to George A. Fuller Co., 597 Madison Ave., New York, Zone 22. Est. **$1,000,000.** Bids 7/14. CD 6/27.

O., Columbus—DWELLINGS—Home Builders Management Corp., 17 S. High St., 40 one story frame dwellings, Audubon Rd., Arcadia, Akola and Arlington Aves., Edgar Pl. and Homecroft Dr. Owner builds, **$272,000.**

Tex., Beaumont — APARTMENT — Northway Arms, c/o W. J. Christian, Beaumont, 72 apartment units, own forces. **$550,000.** CD 9/12.

Tex., Dallas — HOUSING — Hub Hill, 1214 McKinney St., housing, Cockrell Hill area, own forces. Approx. **$450,000.** CD 9/13.

Tex., Fort Worth — COMMUNITY CENTER — Beverly Hills Development Co., 209 W. 8 St., community center, Unit 2, own forces. **$400,000.** CD 5/9.

Tex., Houston — RESIDENCES — Babbitt & Beall Realty Co., 61 Fichter St., 60 residences, Burbank Gardens. Owner builds. **$420,000.** CD 9/13.

Tex., Houston — APARTMENT — Baswood Corp., c/o Olin E. Bass, 3002 Travis St., 100 unit apartment (negro). Owner builds. Approx. **$400,000.** CD 9/12.

Tex., Houston — DWELLINGS — H. R. Houck, 7616 Gramercy St., 100 dwellings, Braes Heights, own forces. **$785,000.** CD 3/18/47.

Tex., Houston — HOUSING — Martin Constr. Co., N. Esperson Bldg., housing. Owner builds. Approx. **$250,000.** CD 9/13.

Tex., Houston — DWELLINGS — Rottermann Builders, Inc., 5118 Laurel St., 35 dwellings, Teas Addn. Owner builds. Approx. **$285,000.** CD 9/13.

Tex., Houston—DWELLINGS—Southerest, Inc., 4151 Lanark Lane, 34 addnl dwellings, off Mykawa Rd., to Satterwhite Constr. Co., 4151 Lanark Lane. Approx. **$264,000.** CD 9/6.

Tex., Houston — SHOPPING CENTER — Southerest, Inc., c/o M. F. Satterwhite, 4151 Lanark Lane, shopping center, own forces. **$225,000.** CD 9/6.

Tex., Marshall — HOUSING — Pine Crest Realty Co., c/o S. E. Wood, Jr., Marshall, 58 unit housing, own forces. Approx. **$375,000.** CD 9/6.

Tex., San Antonio — MERCANTILE — Bruners, Inc., 2118 Fredericksburg Rd., mercantile units, to Victor Picasso Constr. Co., 602 Colima St. Approx. **$250,000.** CD 9/6.

Tex., San Antonio—APARTMENT—Claude Hill, 3130 Broadway, efficiency apartment units and 2nd story commercial addn., own forces. Approx. **$250,000.** CD 9/6.

Wash., Everett — LODGE — Everett Eagles Aerie 13, Everett, lodge bldg., to Newland Constr. Co., Everett. Approx. **$300,000.** CD 4/28/47.

Wis., Fon du Lac — HOME — Lutheran Home for Aged, Inc., 244 N. Macy St., 4 story, 35x62 ft., rein. con., brick home for aged addn., to Immel Constr. Co., 562 N. Main St. R. F. Clas, Inc., 524 E. Mason St., Milwaukee, Zone 2, archt.

Wis., Milwaukee — PARISH HOUSE, etc. — St. Marks Episcopal Church, 2618 N. Hackett Ave., Zone 11, parish house and guild hall, to Urbanek Constr. Co., 930 E. Burleigh St., Zone 12. A. L. & A. W. Seidenschwartz, 2108 N. 64 St., Wauwatosa, Zone 13, archts.

Alaska, Anchorage — APARTMENT — Turnagain, Inc., Anchorage, 7 story, rein.-con., steel apartment, to Swalling Constr. Co., Anchorage. Approx. **$700,000.** CD 4-8.

●**Alaska, Juneau** — APARTMENT — Martin Anderson, c/o E. W. Morrison, archt., 719 2 Ave. Bldg., Seattle, Wash., 7 story, 100x100 ft., steel, rein.-con. apartment, day labor. **$1,126,000.** CD 9/6.

Ont., Ottawa — HOUSING — George Dupuis, c/o contractor, 51 dwellings, Merivale Rd., to Lamaco Constr. Co. Ltd., 172 Blvd Sacred Heart, Hull, **$357,000.**

Ont., Ottawa — CHURCH — Parish of St. Marys, Rev. Canon G. O'Toole, p. p. 199 Bayswater Ave., rein.-con. church, to Ross-Meagher, Ltd., 9 Echo Dr., Ottawa, Approx. **$275,000.** Bids 8/16. CD 7/29.

Ont., Ottawa—HOUSING—Peerless Houses of Canada Ltd., 332 Wellington St., 30 addnl. houses, Manor Park, approx. 1 mi. east, from here, own forces. Approx. **$300,000.**

Que., Montreal — SCHOOL — Catholic School Comm., c/o M. Jarry, secy., Montreal, school 48, Martyrs Canadiens, Perthavais St. near Sauve Ave., to Quemont Constr., Inc., 285 Bernard Ave. W., Approx. **$275,000.** E. A. Doucet, 2245 Sherbrooke St. E., archt. Leblanc & Montpetit, 513 Rachel St. E., engrs.

Que., Ville Jacques Cartier—ORPHANAGE —Reverend Frederick Mathers, 2010 Dorchester St. W., 4 story concrete, steel, stone, brick orphanage, to R. Hamelin 354 Ste. Catherine St. E., Montreal, Approx. **$250,000.** Trevier & Belanger, 5276 Notre Dame de Grace Ave., Montreal, archts.

Que., Quebec City—SCHOOL—Roman Catholic School Comm., Quebec City, E. Huot, secy., 2 story, 55x120 ft. girls school and teachers residence, Parish of Notre Dame de la Pitie, Gamelin St., to A. Maranda, Incorp., 814½ St. Vallier St., Approx. **$251,425.** G. Chabot, 226 St. Jean St., archt. CD 2/21.

INDUSTRIAL BUILDINGS

BIDS ASKED

September 30

Ga., Bainbridge—SALES and SERVICE—R. L. Rich Chevrolet Co., c/o Dennis & Dennis, archts., G. & S. Bank Bldg., Albany, auto sales and service bldg. CD 9/12.

October 11

Tex., Port Neches—PLANT—B. F. Goodrich Chemical Co., Port Neches, addnl. plant expans. for mfg. cold rubber. $300,000. CD 10/28.

October 12

Ind., Indianapolis — WAREHOUSE — Omar, Inc., 1910 Harney St., Omaha, Neb., branch warehouse, $125,000. Extended date. Luria Eng. Co., 500 5 Ave., New York, N. Y., engr. CD 7/11.

October 17

O., Hamilton—WAREHOUSE—Omar, Inc., 1910 Harney St., Omaha, Neb., branch warehouse. $125,000. Luria Eng. Co., 505 Ave., New York, N. Y., engr.-archt. CD 8/25.

SOON LETS CONTRACT

Calif., San Jose—PRESS—San Jose Mercury Herald & Evening News, 211 W. Santa Clara St., soon lets contract 2 story 62x132 ft. press bldg. Approx. $68,000. Ralph Wyckoff, Santa Clara and Market Sts., archt.

Fla., Doctor Phillips—PLANT—Dr. P. Phillips Co., Orlando, soon lets contract fertilizer plant.

Ga., Bainbridge—SALES and SERVICE—R. L. Rich Chevrolet Co., c/o Dennis & Dennis, archts., C & S National Bank Bldg., Albany, soon lets contract auto sales and service bldg.

Tenn., Fayetteville—BOTTLING PLANT—Coca-Cola Bottling Co., c/o Albert R. Frahn & Assoc., archts., 502 2 Ave., Decatur, Ala., soon lets contract bottling plant. **$70,000.**

Tex., Houston—SERVICE STATION—Humble Oil & Refining Co., Humble Bldg., soon lets contract 1 story field and geophysical service station, $100,000. Brown & Baer, 2017 W. Gray St., archts. Howard & John & Kelley, Scanlon Bldg., engrs. CD 8/23.

Tex., Tyler—AUTO PARKING—R. W. Fair, 225 S. College St., soon lets contract 2½ story (ultimately 5 story) auto parking, $200,000. S. W. Ray, Jacksonville, archt. CD 8/23.

Man., Winnipeg—PLANT—T. W. Creighton, engr., 305 Canadian Pacific Railway Co., Station, Winnipeg, soon lets contract brick, rein.-con. power plant.

Que., Maria—RAILWAY STATION—W. E. Robinson, c/o Canadian National Railway, Moncton, N. B., soon lets contract railway station. Approx. $75,000. B. Wheelwright, ch. engr., 360 McGill St., Montreal, ch. engr.

LOW BIDDERS

Neb., Stromsburg—WAREHOUSE, etc.—Polk County Rural Pub. Power Dist., Stromsburg, rejected bids Aug. 31, warehouse and garage, L. B. **$83,496.** Will re-advertise. CD 8/24.

N. C., Raleigh—SALESROOM and WAREHOUSE—Pittsburgh Plate Glass Co., Raleigh, Sept. 7, salesroom and warehouse, from John W. Coffey & Son, 320 Glenwood Ave., **$85,528.** CD 9/1.

Tex., Ennis — WAREHOUSE — Leggett & Platt, Ennis, warehouse, from R. R. Jones, Elm Mott, **$69,000.** CD 9/6.

Tex., Houston—GARAGE and SHOP—Continental Bus Center, Inc., 300 Travis St., rejected bids Sept. 9, repair garage and shop, Bagby and Texas Sts. **$175,000.** CD 9/8

Tex., Houston — WAREHOUSE, etc. — Missouri Pacific R. R. Co., R. P. Hart, ch. engr., Missouri Pacific Bldg., St. Louis, 3, Mo., warehouse and office from Schneider Constr. Co., 3004 W. Dallas St., **$163,850.** Cancelled bids, 24x624 ft. covered transfer platform bldg., **$100,000.** CD 9/1, under Commercial Buildings.

Tex., Houston—WAREHOUSE—Owner c/o Jno. G. Turney, archt., 2405 San Jacinto St., 80x135 ft. steel, metal siding warehouse, concrete slab fdn., from Tellepsen Constr. Co., 17110 Telephone St., **$70,000,** Est. $90,000. CD 9/8.

CONTRACTS AWARDED

Ala., Birmingham—PLANT, etc.—Ceco Steel Products Corp., c/o contractor, mfg. plant and office, to Daniel Constr. Co., 822 7 Ave. So. Approx. **$75,000.**

Calif., San Francisco—WAREHOUSE—Mr. Bowen c/o Clarence E. Seage, engr., 681 Market St., 1 story, 67x218 ft. structural steel warehouse, to Carlen Constr. Co., 163 Sutter St. Approx. **$70,000.**

Conn., New Haven—FACTORY—Griest Mfg. Co., Blake St., 1 story, 320x140 ft., masonry, steel factory, Blake St., to John Palumbo, 97 Spring Garden St., Hamden. **$86,400.** Leo F. Caproni, 1221 Chapel St., archts.

Ga., Atlanta — WAREHOUSE, etc. — Great Southern Trucking Co., c/o contractor, warehouse, office and shop, to G. Lloyd Preacher & Assoc., Bona Allen Bldg., Approx. **$500,000.**

Ga., Dublin—MILL—Dublin Woolen Mills, Dublin, mill addn., to Mc Koy-Helegerson Co., Greenville, S. C. Approx. **$75,000.** Bids 8/31. CD 8/31.

Ill., Chicago—PLANT—Chicago Carton Co., 4200 S. Pulaski St., Zone 32, 160,000 sq. ft. steel, pressed brick plant exten., concrete floors, to Carl E. Erickson, 4657 N. Ravenswood St., Zone 40, **$700,000.** Awarded 8/1. CD 1/6.

Ill., La Grange—PAINT, etc.—Electro-Motive Div., General Motors Corp., Research Bldg., Detroit, Mich., 1 story, brick, concrete, steel paint and test bldg. addn. remodeling; 1 story, brick, concrete pump house and reservoir, to Ranger Benson, Inc., 4744 W. Rice St., Chicago.

Ind., Marion—WAREHOUSE—Omar, Inc., 1910 Harney St., Omaha, Neb., branch warehouse, to Ostrom Constr. Co., Inc., 333K of P Bldg., Indianapolis, **$75,000.** Bids 8/15. CD 7/11.

Ky., Maysville—WAREHOUSE—Parker Tobacco Co., Maysville, tobacco warehouse, to A. J. Verville, Maysville, Approx. **$70,000.**

Md., Baltimore—MANUFACTURING—Procter & Gamble Co., Gwynne Bldg., Cincinnati, O., light mfg. bldg., foundation, tanks 1422 Nicholson St., Locust Point, to H. K. Ferguson Co., 1783 E. 11 St., Cleveland, O., **$69,495.** Richard R. Graef, c/o owner, archt.

Minn., Minneapolis—GARAGE—Kraft Foods Co., 500 Pestigo Court, Chicago, 90, Ill., general contract 1 story, structural steel, brick garage, 2521 E. Hennepin Ave., to Campbell, Lowrie, Laudermilch, 400 W. Madison Ave., Chicago, Ill., Approx. **$75,000.**

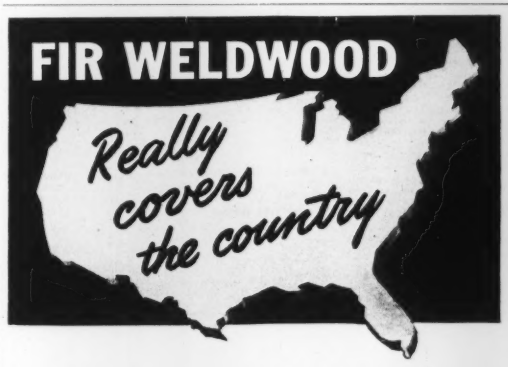
Okla., Oklahoma City—WAREHOUSE, etc.—Warren Transfer Co., 2 W. 11 St., Zone 2, warehouse and storage bldg., 31 and Santa Fe Sts., to E. B. Bush Constr. Co., 3500 W. Reno St., Zone 4, **$79,330.** Est. $85,000. Awarded 8/30. CD 3/30.

Pa., Pittsburgh — PLANT — Morrison & McCluan, Inc., 2301 Smallman St., 1 and 2 story 19x263 ft. concrete block food processing plant addn. and alterations to Crump, Inc., 4031 Bigelow Blvd., Approx. **$75,000.** Bids 8/19. CD 8/19.

Tenn., Chattanooga—WAREHOUSE—Southern Chemical Cotton Co., c/o contractor, warehouse, to Mark K. Wilson Co., Chamberlain Bldg., Approx. **$85,000.**

Tenn., Memphis—WAREHOUSE—Memphis Compress & Storage Co., c/o B. S. Merrill, engr., Shrine Bldg., cotton storage warehouse, to S. & W. Constr. Co., Shrine Bldg., Approx. **$68,000.**

Tenn., Memphis—TERMINAL—A. H. Truck Lines, c/o contractor, truck terminal, to William Cuthbreath Constr. Co., Porter Bldg., Approx. **$68,000.**



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Scranton, Pa. Dept. E, U. S. A.

Tex., Abilene—REFINERY—Patton Oil Refinery, Abilene, reconstructing refinery, to J. Mc Williams & Co., Sweetwater. **$92,000.**

Tex., Bayside—PLANT—Bayside Richardson Gin Co-operative, Bayside, cotton gin plant, Owner builds, Approx **$90,000.** CD 8/29

●**Tex., Corpus Christi**—GRAIN ELEVATOR—Louis E. Meekins & Assoc., 1101 N.E. 23 St., Fort Worth, 18 story 1½ million bushel capacity grain elevator, own forces. Approx. **$1,750,000.** CD 5/26.

Tex., Dallas—SHOP, etc.—Kliff Motor Truck Co., 1515 Worth Ave., auto shop, parts and storage, to Carpenter Bros., 1335 Plowman St., Approx. **$70,000.** Phil Crown, 1335 Plowman St., archt.

Tex., Dallas—SHOP—Van Winkle Motor Co., 4023 Oak Lawn St., addnl. auto service shop, display, parts, to W. H. Malone & Son, 1704 Orleans St., Approx. **$115,000.** CD 9/6.

Tex., Houston—PLANT—Chiksan Co., 2023 Semmes St., well equip. mfg. plant addnl. expansion. Owner builds, **$85,000.** CD 8/30/46.

Tex., Houston — WAREHOUSE — Houston Central Warehouse Co., 501 Middle St., warehouse, own forces. Aprox **$75,000.**

Tex., Kenedy—REFINERY—Archer-Daniels Midland Co., Kenedy, linseed oil refinery to S. E. Newman, Kenedy. Approx. **$75,000,** CD 3/23.

Tex., Longview—BOTTLING PLANT—Royal Crown Bottling Co., Longview, bottling plant unit, own forces. **$80,000.** CD 10/22.

Tex., Sherman—WAREHOUSE—Lone Star Gas Co., 1915 Wood St., Dallas, warehouse remodeling, own forces. Approx. **$75,000.** Roy R. Lane, Construction Bldg., Dallas, archt.

Wash., Spokane—DEPOT CONCOURSE, etc. —Northern Pacific Ry., 176 E. 5 St., St. Paul, Minn., remodeling depot concourse and platform, day labor. **$350,000.**

●**Wis., Superior**—GRAIN ELEVATOR—Farmers Union Grain Terminal Assn., Snelling Ave. N. and Larpenteur Ave. W., St. Paul, Minn., 5,500,000 bu. concrete grain elevator addn., to McKee-Hagge-Simons Co., 1116 Flour Exchange, Minneapolis, Minn. Approx. **$5,000,000.** CD 8/6/45.

Alta., Hanna—PLANT—Chloro Gas Products Inc., Long Beach, Calif., plant, to Hanna Petroleum Ltd., Hanna. Approx. **$150,000.**

Man., Flin Fon—FACTORY—Western Grocers Ltd., Flin Flon, concrete, steel, brick warehouse, to Commonwealth Constr. Co., Ltd., Royal Bank Bldg., Winnipeg. **$100,000.**

Ont., Ottawa—WAREHOUSE—Crane Ltd., 148 Bank St., Ottawa, warehouse and office, corner Catherine and Lyon Sts., to James More & Sons Ltd., 239 Argyle St. Approx. **$112,422.** CD 8/19.

Ont., Sarnia — BOILER HOUSE — Electric Auto Lite Ltd., 7 Christina St., boiler house, to R. W. McKay, 400 N. Front St., Approx. **$100,000.**

Ont., Toronto—FACTORY—Litho-Print Ltd., 120 Duke St., Toronto, 1 story, 60x135 ft. steel, masonry, factory, boiler room in bsmt., corner Mark and Defries Sts., to Sinclair-Ferguson Ltd., 1055 Eglinton Ave. Approx. **$125,000.** Bids 8/26. CD 8/26.

Ont., Toronto—TERMINAL OFFICE—Toronto Terminal Warehouse foot York St., 17x23x25 ft. and 15x39 ft. L-shaped steel, concrete, masonry terminal office addn., to George Constr. Co., Ltd., 363 Rogers Rd., Toronto. Approx. **$70,000.** J. H. W. Bradfield, 12 Adelaide St. E., archt.

Ont., West Lorne—FACTORY—Golden Acres Enterprises Ltd., West Lorne, concrete, brick factory, day labor. **$70,000.**

Que., Amos—DIAMOND DRILLING—Oremonte Mines Inc., 10463 Decarie Blvd., Montreal, diamond drilling shaft sinking. Own forces. **$75,000.**

●**Que., Cap de la Madeleine**—PLANT IMPRVS.—Norton Co. of Canada, Ltd., Cap de la Madeleine, exten., general repairs and altering bldg., to Dollard Constr. Co., Ltd., 72 Bureau St., Approx. **$1,000,000.** CD 12/27/48.

Que., St. Rose—PLANT, etc.—Rayonese Textiles Ltd., 600 Dorchester St. W., Montreal, 1 story, 82 x 175 ft. concrete, brick, plant, offices, Labelle Hy., to John F. Wickenden Co. Ltd., Ameau Bldg., Three Rivers. Approx. **$70,000.** Lawson & Berlis, 660 St. Catherine St. W., Montreal, archts.

Que., Three Rivers—SHOP—Shawinigan Water & Power Co., 600 Dorchester St. W., Montreal, 1 story, 85 x 100 ft., concrete, steel, brick repair shop, St. Maurice St., to John F. Wickenden Co. Ltd., Ameau Bldg., Approx. **$105,000.** T. W. Burge, 4059 Beaconsfield Ave., Montreal, archts.

Sask., Regina—STORAGE—Sick's Brewery Ltd., 7 Dewdney Ave., 2 story, brick structure to house storage tanks for aging beer and storage space for hops, to Bird Constr. Co. Ltd., 7 Ave. at Smith St. **$250,000.** CD 5/4.

UNCLASSIFIED

BIDS ASKED

Late in September or Early in October

Missouri—RURAL DISTRIBUTION LINES —Co-Mo. Electric, Co-operative, Inc., Jack H. Needy, mgr., Tipton, 408 mi. rural distr. lines, 85 mi. conversions, tie lines, sys. imprvs., in N. P. and S Sects., Cooper, Moniteau, Morgan, Camden, Cole and Benton Counties, Frank Horton & Co., Lamar, engrs.

September 30

N. Y. New York—SUBSTATIONS, etc.—Bd. Transportation, 250 Hudson St., Zone 13, Contr. 1 general contract, Contr. 2 plumbing Brady and Alberton substations, circuit breaker house and signal tower for Dyre Avenue Line, Bronx Boro.

October 4

†**California** — STEEL TOWERS — Bureau Reclamation, Box 2511 Sacramento, steel towers for 230-kv transmission lines, Shasta-Tracy West Side Lines, double circuit steel towers for Central Valley Proj. R-2-74. Plans deposit $2.

†**Wyoming**—ANCHOR BOLTS, etc.—Bureau Reclamation, Dpt. Interior, Casper, furnishing, del. low voltage steel structures and anchor bolts for Cheyenne substation addns., Kendrick Proj.

October 6

California—TRAFFIC SIGNAL SYSTEMS, etc.—State Div., Hys., 120 S. Spring St., Los Angles, traffic signal sys. on Firestone Blvd. La Peina Ave. on Anaheim-Telegraph Rd. Paramount Blvd. on Whittier Blvd. at Passions Blvd. and in Alhambra on Valley Blvd. at Vega St ; traffic signal systems and highway lighting Pioneer Blvd. at Orangethorpe Ave. and on Norwalk Blvd. at Anaheim-Telegraph Rd., Los Angeles Co. G. T. Mc Coy, Sacramento, state hy. engr.

California — TRAFFIC SIGNAL SYSTEM, etc.—State Div. Hys., 120 S. Spring St., Los Angeles, traffic signal sys. and hy. lighting on Mt. Vernon Ave. at 4, 6 and 7 Sts. and Base Line St. G. T McCoy, state hy. engr.

October 7

†**California**—TRANSMISSION LINES—Bureau Reclamation, Dpt. Interior, Elverta, 230-kilovolt transmission lines Perkins to Tracy and Oroville to Elverta, Central Valley Proj., Spec. 2781.

October 13

●†**Texas**—RAILROAD RELOCATION—U. S. Eng., 606 Santa Fe Bldg., Galveston, relocating M. K & T. Ry. Co. railroad, DeLeon Div. in vicinity Whitney Dam and Reservoir, $2,000,000. Plans deposit $50. CD 8/24.

October 18

†**N. J., Fort Dix**—SWIMMING POOL, etc.— U. S. Eng., 120 Wall St., New York, 5, N. Y., swimming pool and bath houses, $200,000. Extended date. CD 8/29.

October 25

Tex., Waco—STADIUM—Baylor University, Waco, 40,000 seat stadium, incl. appurtenances, athletic field., $900,000. W. E. Simpson Co., 945 Mitan Bldg., San Antonio engr. Halsey & Royer, Transit Tower, San Antonio, mechanical engrs. CD 4/11.

Before January 1, 1950

Nebraska—RURAL DISTRIBUTION LINES —Eastern Nebraska Public Power Dist., R. C. Johnson, pres., Syracuse, 30 mi. 66 kv single pole shielded rural distr. lines, five 66 kv substations and approx 70 mi. double pole X braced H frame 66 kv line exten. from Bellevue to Humboldt. Henningson Eng. Co., 626 Standard Oil Bldg., Omaha, Zone 2, engr.

Bids Asked

Tex., Longview — GAS LINES — Tennessee Eastman Corp., Kingsport, natural gas lines, $50,000.

LOW BIDDERS

Nebraska—RURAL DISTRIBUTION LINES —Midwest Electric Membership Corp., Grant, 275.9 mi. rural distr. lines (Nebraska sSD Perkins) Keith, Perkins, Lincoln and Chase Counties, from A. B. Reither Constr. Co., Inc., 602 Denham Bldg., Denver, Colo., **$244,048.** CD 8/31.

North Dakota — RURAL DISTRIBUTION LINES — Slope Electric Co-operative, New England, rejected bids Aug. 23, 300 mi. rural distr. lines, L. B. **$312,679.** CD 8/9.

South Dakota — RURAL DISTRIBUTION LINES—Central Electric Co-operative, Blunt, Aug. 29, 434 mi. rural distr. lines, Hughes Co., from Philard, Inc., Huron, **$567,309.** CD 8/17.

Texas — RURAL DISTRIBUTION LINES — Comanche County Electric Co-operative Assn., Comanche, Sept. 1, 248 mi. rural distr. lines Comanche, Callahan, Brown and Eastland Counties, from Sisco Electric Co., P. O. Box 88, Conroe, **$246,509.** Est. $225,000. CD 8/26.

CONTRACTS AWARDED

Conn., Stratford—TELEVISION STATION— National Broadcasting Co., Radio City, New York, N. Y., design and construction 250 ft. antenna, residential type transmitter bldg., ultra-high frequency television sound facilities, Television Station, Broadmere Ave. at Remington Park, to Skinner, Cook & Babcock, 60 E. 42 St., New York, N. Y. Approx. **$250,000.** CD 7/13.

Ga., LaGrange — MOTOR COURT — R. B. Robinson, Newnan, motor court. Owner builds, **$100,000.**

Ind., Clarksville—DRIVE-IN THEATRE— Clarksville Drive-In Theatre Inc., c/o Theodore J. Atkins, Clarksville, driven-in theatre, Clarksville-New-Albay Rd., sperate contracts, Approx. **$75,000.**

Iowa—RURAL DISTRIBUTION LINES— Rideta Electric Co-operative, Inc., Mount Ayr, 189.45 mi. rural distr. lines, sys. imprvs., Ring-

gold Co., to Stewart, Inc., Anamosa, **$254,782.** Bids 6/15. CD 6/6.

Ia., Osage—SWIMMING POOL, etc.—City, F. J. Cromer, city clk., City Hall, swimming pool, bath house, to R. A. Schultz, Charles City, **$72,251.** Bids 8/30. CD 7/27.

Kansas—RURAL DISTRIBUTION LINES—Central Kansas Electric Co-operative Assoc. Inc., Great Bend, 399 mi. rural distr. lines, Barton Co., to A. F. Reis, 702-4 Natl. Bank Bldg., Topeka, labor **$96,998**; materials **$399,000**, total $495,998. CD 9/27/48.

Kan., Stafford—SWIMMING POOL, etc.—City, City Hall, general contract swimming pool, bath house, etc., to N. F. English Constr. Co., Inc., Hutchinson, **$57,500.** Bids 8/29. CD 8/17.

Kentucky—RURAL DISTRIBUTION LINES—Licking Valley Rural Electric Co-operative Corp., West Liberty, 241 mi. rural distr. lines, Morgan Co. to L. O. Brayton & Co., P.O. Box 116, Dyersburg, Tenn. **$261,796.** Tanner Eng. Co., 137 High St., Lexington, engr. CD 9/9/48.

Kentucky—RURAL DISTRIBUTION LINES—West Kentucky Rural Electric Co-operative Corp., Mayfield, 261 mi. distr. lines, Graves Co., to J. W. Layne, 212½ Union St., Nashville, Tenn., **$313,242.** W. O. Smith, 305 E. Broadway, engr. CD 8/23/48.

Louisiana—RURAL DISTRIBUTION LINES—Southwest Louisiana Electric Membership Corp., 203 N. College Ave., Lafayette, 84.23 mi. rural distr. line, Lafayette Co., to Ford Constr. Co., Taylorsville, Miss., **$92,758.** CD 4/25.

Maine—RURAL DISTRIBUTION LINES—Denny's River Electric Co-operative, Inc., Box 342, Calais, 32.257 mi. rural distr. line and sys. imprvs., Washington Co., to J. A. Steele Constr. Co., 157 Union St., Calais, labor **$19,000**, material, **$32,000**, total **$51,031.**

Michigan—RURAL DISTRIBUTION LINES—Tri-County Electric Co-operative, Portland, 38.85 mi. rural distr. lines and sys. imprvs., Ingham Co., to Chippewa Constr. Co., 328 Federal Square Bldg., Grand Rapids, labor **$17,486**, materials **$36,000**, total $53,486. J. & G. Daverman Co., 301 Keeler Bldg., Grand Rapids, engr. CD 3/4.

Minnesota—RURAL DISTRIBUTION LINES—Consumers Delight Electric Co-operative Assoc., Inc., Federal Dam, 117 mi. rural distr. lines, Cass Co., to Hermans & Braatz, Spooner, Wis., labor **$39,116**, materials **$117,000**, total $156,116. CD 5/25.

Minnesota—RURAL DISTRIBUTION LINES—Steele-Waseca Co-operative, Electric, Owatonna, 11 mi. 69 kv transmission lines, Waseca Co., to McHugo Constr. Co., 901 Nicollet Ave., Mankato, **$68,000.** Ellerbe & Co., T-505 First National Bank Bldg., St. Paul, engrs.

Mississippi—RURAL DISTRIBUTION LINES—Coast Electric Power Assoc., Bay St. Louis, 94 mi. rural distr. lines, Hancock Co., to Victory Electric Co., 266 St. Michael St., Mobile, Ala., **$79,735.** CD 8/30.

Missouri—RURAL DISTRIBUTION LINES—Platte-Clay Electric Co-operative, Platte City, 135.24 mi. rural distr. lines, Clinton, Platte, Buchanan, Clay, Ray and Caldwell Counties, to James H. Drew Corp., Architects & Engrs., 815 Indianapolis, Ind., **$172,301.** Bids 8/30. CD 8/23.

Mont., Bozeman—STEAM LINES—State Bd. Educ., Helena, underground steam lines at Montana State College, to C. E. Anderson Plumbing & Heating Co., Livingston, **$122,206.** Bids 8/25. Sullivan Valve & Eng. Co., 909 E. 2 St., Butte, engrs.

Nebraska—RURAL DISTRIBUTION LINES—Custer Public Power Dist., Broken Bow, labor and materials, rural distr. lines, **130.1** mi. Sect. 14 and 27.1 mi. Sect. 15, to Crawford Electric Co., North Platte, **$162,007.** Bids 8/30. CD 8/16.

Nebraska—RURAL DISTRIBUTION LINES—Wheat Belt Electric Membership Assoc., Sidney, approx. 621.62 mi. rural distr. lines, Cheyenne, Deuel, Garden and Morrill Counties, to Goins & Hon Constr. Co., Horton, Kan., **$518,500.** Bids 9/1, awarded 9/7. CD 9/12, under LB.

South Carolina—RURAL DISTRIBUTION LINES—Tri-County Electric Co-operative, Inc., St. Matthews, 49 mi. rural distr. lines, sys. imprvs., Calhoun Co., to F. J. Seastrunk Electric Co., 1731 Hardon St., Columbia, **$86,397.** CD 5/19/48.

South Dakota—RURAL DISTRIBUTION LINES—Turner-Hutchinson Electric Co-operative, Marion, 210 mi. rural distr. lines, Sect. 2, and 290 mi. Sect. 1 Turner Co., to Franzen Bros., Palisades, Minn., **$545,470.** Bids 8/26. CD 8/24.

Texas—RURAL DISTRIBUTION LINES—Gate City Electric Co-operative, Childress, 78.3 rural distr. lines, Childress Co., to South Constr. Co., Box 432, Ardmore, Okla., **$79,363.** Bids 8/23. H. N. Roberts & Assoc., 1310 Avenue Q, Lubbock, engrs. CD 2/11.

Tex., Kenedy—RADIO STATION—Bexar Broadcasting Co., Natl. Bank Commerce Bldg., San Antonio, radio station, 17½ acre location halfway between Kenedy and Karnes City, own forces. Approx. **$50,000.**

Tex., Longview—SPUR LINE—Gulf, Colorado & Santa Fe Ry. Co., W. T. Donoho, acting ch. engr., Rosenburg and Strand Sts., Galveston, several miles railway spur line from main line to proposed Eastman Plant. Owner builds. Approx. **$75,000.**

Tex., Longview—SPUR LINE—Missouri Pacific Ry. Lines, R. P. Hart, ch. engr., Missouri Pacific Bldg., St. Louis, 3, Mo., 8 mi. railway spur line from main line to Eastman Corp. Plant. Owner builds. Approx. **$90,000.**

Tex., Victoria — ELECTRIC LIGHTING SYSTEM—E. I. du Pont de Nemours & Co., du Pont Bldg., Wilmington, Del., outside electric lighting sys., 1,700 acre Chemical Plant zone, near here. Owner builds. **$70,000.** Frank B. MacKie, du Pont Bldg., Wilmington, 98, Del., ch. engr.

Utah, Salt Lake City—HEATING PLANT—Holy Cross Hospital, 1045 East 1st South St., general contract heating plant for hospital and nurses school, to Perce Young Bldg. Constr. Co., 517 Wasatch Oil Bldg., **$86,800**; installing plumbing and heating equip., to James Plumbing & Heating Co., 128 W. 2nd South St., **$134,264.** Bids 9/2. Ware & McClenahan, 610 Utah Savings & Trust Bldg., archts.

Utah, Salt Lake City—ELECTRICAL DISTRIBUTION—State Building Bd., State Capitol, electrical distr. sys. for state penitentiary at Port of the Mountain, near here, to Vance Electric Co., 1063 South State St., **$62,700.**

Que., Montreal—CONDUITS—Municipality, restoration master conduits, Atwater Ave. near low level pumping station to Pentagon Constr. Co. Ltd., 1225 Bishop St., **$95,000.** H. A. Gibeau, city engr.

Sask., Yorkton—STREET LIGHTING—Municipality, mayor, C. G. Langville, ornamental street lighting sys., underground cables, own forces, **$54,870.** H. Bailey, city engr. Saskatchewan Power Comn., Regina, consult. engr.

PROPOSED PROJECTS

WATER SUPPLY

Tex., Eagle Lake—City, Eagle Lake, bond election September 27, WW sys. imprvs., lines, 100,000 gal. underground concrete reservoir. **$105,000.** The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, consult. engrs.

Tex., Odessa—City, c/o Casey Fannin, city mgr., Odessa, WW extens. and imprvs. Approx. **$100,000.** Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 4/28.

●**Tex., Stamford**—City, c/o Grady Bowdry, city mgr., Stamford, WW extens. and imprvs. **$1,000,000.** Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 8/27/46.

Ont., Etobicoke — Etobicoke Twp., Etobicoke, WW plant. **$750,000.**

Ont., Fort Arthur—Municipality, dam at Onion Lake, **$210,218.** R. B. Chandler, U. Utilities, Comn., engr.

SEWERS, WASTE DISPOSAL

Ia., Spirit Lake—State Conservation Comn., 914 Grand St., Des Moines, Iowa Great Lakes, sewer sys., **$300,000.** H. R. Green Co., 417 1 Ave. S. E., Cedar Rapids, engr.

Tex., Eagle Lake—City, Eagle Lake, bond election September 27, enlarging sanitary sewer sys. **$310,000.**

Ont., Beamsville — Municipality, H. Reid clk., sewerage sys., **$200,000.** C. R. Hagey, 7 Lakeshore Dr., Fort Erie, engr. CD 1/19.

Ont., London—London Twp. Council, Blake Kennedy, clk., 106 King St., sewage disposal sys., for factory area just east of London. Approx. **$200,000.** R. C. Dunn, 106 King St., London, engr.

BRIDGES

N. B., Fredericton—Municipality, overhead bridge to University of New Brunswick, **$100,000.** J. D. MacKay city engr.

Ontario—Province of Ontario, Toronto Ont., **Sarnia**—overpass at Christiana St., to give access to city from dual section of No. 7, Hy., Over **$100,000.**

STREETS AND ROADS

Tex., Kountze—Hardin Co., c/o Kountze Road Dist., Kountze, bond election September 27, hard surf. streets in Silsbee and rural roads. **$540,000.**

LATIN AMERICA

Mexico, Mexico City—Alfombras Mohawk de Mexico, S. A., Calle 21 Poniente, 522, Col. Santa Maria Insurgentes, Mexico, D. F., plans woolen rug and mat factory. **$300,000.**

PUBLIC BUILDINGS

Ala., Jasper—HOMES—City Housing Auth., c/o Long & Gatling, archts., Frank Nelson Bldg., Birmingham, 40 duplex type homes,. Approx. **$250,000.**

●**Calif., Corona**—PRISON—State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Gordon B. Kaufmann & J. E. Stanton, 627 S. Cardonelet St., Los Angeles, women's prison. **$3,600,000.**

Calif., Fresno—MECHANICS, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Franklin & Simpson, 752 Fulton St., Fresno, agriculture mechanics bldg. at Fresno State College, **$305,000**; plans by Fred L. Swartz & W. C. Hyberg, Rowell Bldg., Fresno, science bldg. at Fresno State College, **$455,490.** CD 2/28/45.

●**Calif., Los Angeles**—RECEPTION CENTER, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Austin, Field & Fry, 1151 S. Broadway, Southern California Reception Center and Clinic for California Youth Assn., near here. **$1,600,000.**

Calif., Pasadena—TRADES and TECHNOLOGY—City School Dist., plans by Bennett & Bennett, 1165 E. Colorado St., 25,000 sq. ft. trades and technology bldg. at Pasadena City College, **$250,000.**

●**Calif., Paso Robles**—SCHOOL—State Div., Architecture, P. Wks. Bldg., Sacramento, plans by Earl Heitschmidt & Charles O. Matcham, 449 S. Beaudry St., Los Angeles, Paso Robles School for Boys. **$1,350,989.**

●**Calif., Sacramento** — EDUCATION, etc.— State Div. Architecture, P. Wks. Bldg., plans by Harry J. Devine, 1012 J. St., Sacramento, Capitol Mall education bldg., **$2,300,000**, plans by Claude Beelman, 7421 Beverly, Los Angeles, Northern California reception center (California Youth Center) **$1,300,000.**

●**Calif., San Francisco**—HIGH SCHOOL—Dpt. P. Wks., City Hall, plans by Kump & Falk, 9 Main St., Junior High School, Funston Ave. and Santiago St., **$3,200,000**; school, Quintara St. at 14 Ave., **$1,250,000.** CD 8/4/46.

Calif., San Jose—SPEECH — State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Ralph Wycoff, Market and Santa Clara Sts., San Jose, speech bldg. at San Jose State College, **$800,000.** CD 4/26/43.

Calif., San Luis Obispo—ENGINEERING, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Allison & Rible, 625 S Westmoreland Ave., Los Angeles, engineering Bldg. for California Polytechnic School. **$495,000**; plans by Paul O. Davis, 501 S. Boylston St., Los Angeles, aeronautics and industrial shop at California Polytechnic School. **$352,000.**

Calif., Santa Rosa—SCHOOLS—Santa Rosa Bd. Educ., Santa Rosa, bond election Oct. 4, South Park, Proctor Terrace and Humbold St. school addns., **$541,500**; gymnasium auditorium and musicroom addn. to Junior High School. **$350,000.**

●**Calif., Santa Rosa**—SCHOOL—State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Harry A. Thomsen & Aleck L. Wilson, 315 Montgomery St., San Francisco, Los Guilucos School for Girls. **$1,650,000.**

Calif., Truckee—SCHOOL—Truckee-Tahoe Joint Unified School Dist., Truckee, voted bonds high school. **$750,000.**

Calif., Whittier—SCHOOL—City School Dist. plans by Harold C. Wildman, 3701 Atlantic Blvd., Long Beach, school, classrooms, administration bldg., kindergarten units, West Whittier. **$400,000.**

Conn., Ansonia—HOUSING—City, Ansonia Housing Auth., Ansonia, plans by Henry T. Moackel & Son, 35 Hillcrest Ave., Naugatuck, 50 housing units, Webb Memorial Park. Approx. **$250,000.**

Conn., North Stonington—SCHOOL—Town, Ellsworth C. Gray, first selectmen, Town Hall, plans by Palmer & Chandler, 16 Franklin St., Norwich, brick, steel school. **$250,000.**

Conn., Stafford Springs—SCHOOL—Town, Bd. Educ., Stafford, brick, steel school, Somers Rd. **$250,000.**

●**Ga., Augusta**—HOSPITAL—City, plans by Scroggs & Ewing, S. F. C. Bldg., University Hospital addn. **$1,100,000.**

Ind., Butlerville—NURSERY—State of Indiana, P. Wks. & Supply Dpt., W. R. Mybeck, Div. 404, State House, Indianapolis, plans by Merdian & Shook, 1400-01 Fletcher Trust Bldg., Indianapolis, 2 story, brick, stone, reinf.-con. steel nursery bldg., Muscatuck State School. **$500,000.** CD 2/27/48.

Kan., Smith Center—HOSPITAL—Smith Co., Smith Center, plans by C. W. & J. A. Shaver, Salina, hospital. **$315,000.**

●**Minn., Excelsior**—SCHOOL—Bd. Educ., W. P. Nilsen, supt., high school, 30 acre plot Hy. 7, near here. **$1,000,000.**

N. D., Dickinson—PHYSICAL EDUCATION—State Bd. Higher Educ., Bismarck, plans by W. G. Kurke, 1117 13 Ave. N., Fargo, physical educ. bldg., State Teachers College. **$275,000.**

N. D., Fargo—SCHOOL—Bd. Educ., plans by H. E. Bechtel, 19 Broadway, Agassiz School, **$700,000.** CD 5/26.

Okla., Oklahoma City—MEDICAL SCHOOL—University Medical School, Oklahoma City, plans by Hudgin, Thompson & Bell, 1100 W. Main St., medical school addn. **$600,000.** CD 12/17/47.

Okla., Oklahoma City—NURSES HOME—University of Oklahoma Regents, University Hospital, 800 N.E. 13 St., plans by Parr & Aderhold, Hales Bldg., nurses home addn. **$250,000.**

Okla., Perry—POWER PLANT—City, City Hall, 900 kw. engine generator unit, city power plant, **$190,000.** CD 2/27/46.

Ore., Roseburg — FARM HOME — Douglas Co., Courthouse, plans by William Laing, U. S. National Bank Bldg., Medford, county farm home, **$255,000.** CD 12/17/47.

●**Pa., Phila.** — HOUSING — Phila. Housing Auth., 21 and Winter Sts., 10,000 housing units. **$80,000,000.**

Pa., Springfield—SCHOOL—Springfield Twp. School Dist., Springfield, plans by Harry G. Stewart, 117 S. 17 St., Phila., school, **$350,000.**

S. C., York—SCHOOL—York School Dist. 11, York, plans by Lyles Bisett, Carlisle & Wolfe, 1302 Main St., Columbia, high school, **$410,000.**

Tenn., Copperhill—SCHOOL—City, plans by William Crutchfield, 809 Pine St., Chattanooga, high school. Approx. **$250,000.**

●**Tex., Ellington Field** — HOUSING — U. S. Govt., c/o Col. B. T. Starkley, Base Commander, Ellington Field, 183 homes, for military personnel, **$1,000,000.**

●**Tex., Houston**—POLICE ADMINISTRATION —City, City Hall, plans by Kenneth Franzheim, 2306 Crawford St., Houston, police administration, **$1,450,000.** CD 7/31/46.

Tex., Levelland—HOTEL—Chamber of Commerce, c/o Sam Billingsley, secy., Levelland, plans by Alvin Cearley, Levelland, 4 story, bsmnt., masonry hotel, **$425,000.**

Tex., Lockhart — SCHOOL — Lockhart Independent School Dist., J. L. Buckley, supt., voted **$500,000** bonds, brick, concrete, steel school, **$368,000.** CD 8/29.

●**Tex., Port Arthur**—HOUSING—Port Arthur Housing Auth., James W. Long, mayor of city, Port Arthur, 100 unit negro rental housing, **$500,000**; 200 unit rental housing, **$1,050,000.** C. J. Harkrider, 1217 Woodland St., Ft. Worth, consultant archt.

Wyo., Cheyenne — GYMNASIUM — School Dist. No. 1, Laramie Co., Cheyenne, high school gymnasium, **$500,000.** Porter & Bradley, 1099 East Lincolnway, Cheyenne, archt. and engr. CD 5/19.

Newfoundland, Grand Bank — FEDERAL OFFICE—Government of Canada, Ottawa, Ont., plans by L. W. Hopkins, c/o owner, federal and provincial offices, **$250,000.** Dpt. P. Wks., Ottawa, Ont., engr.

N. S., Bass River—SCHOOL—Province of Nova Scotia, Halifax, rural high school, **$250,000.** Dpt. Educ., Halifax, archts.

N. S., Dominion—SCHOOL—Town, Miss E. M. O'Brien, clk., Town Hall, plans by Dounie, Baker & Ahern, Canadian Pacific Railway Bldg., Halifax, N. S., school. Approx. **$350,000.**

N. S., Yarmouth—SCHOOL—Municipality, plans by L. R. Fairn, 41 Argyle St., Halifax, high school, **$350,000.**

Que., Quebec City—SCHOOL—Roman Catholic School Comn., Quebec City, plans by G. Chabot, 226 St. John St., school, **$350,000.** CD 1/29/45, under Commercial Bldgs.

Que., Ste. Anne de Beaupre—LABORATORY —Government of Canada, Hunter Bldg., Ottawa, Ont., plans by Arnyot & Marchand, 105 Mountain Hill, Quebec City, laboratory.

●**Que., Valcartier**—HOUSING—Government of Canada, Hunter Bldg., Ottawa, Ont., replacing temporary barracks with permanent barracks, **$1,000,000.** Dpt. National Defense, Cartier Sq., Ottawa, Ont., archt.

Sask., Sherwood—SCHOOL—Regina Public School Isd., Regina, school to replace Imperial School at Broad St., **$250,000.**

COMMERCIAL BUILDINGS

Colo., Denver—RESTAURANT—Jack Lande, 3130 East Colfax St., restaurant at Colfax and Grape Sts., **$250,000.**

Conn., Windsor—HOUSING—Anderson Fair Oaks Co., 141 S. Marshall St., Hartford, 50 homes, Oliver Ellsworth Hy. and Wolcott Avenue Section, **$550,000.**

Ill., Chicago—SCHOOL—Catholic Bishop of Chicago, 720 N. Wabash St., Zone 10, plans by McCarthy & Smith, 69 W. Delaware St., Zone 10, 2 story basmt., 130x135 ft. steel, brick school, St. Dorothy Parish at 459 78 St., $275,000.

Ill., Highland Park—MEDICAL BLDG.—Masonic Temple, 17 N. Sheridan Rd., plans by Atwood & Goldberg, 721 N. Michigan Ave., Chicago 11, modification of Masonic Temple into medical bldg. **$250,000.**

●**Ind., Plainfield**—OFFICE, SERVICE—Public Service Co. of Indiana, R. A. Gallagher, pres., Traction Terminal Bldg., Indianapolis, plans by Naess & Murphy, 80 E. Jackson Blvd., Chicago, Ill., 1 & 2 story, 150x400 ft. L-shaped rein.-con. steel, brick office and service bldg., garage, **$3,000,000.**

Ind., Tipton—SCHOOL—St. John the Baptist Church, Rev. J. G. Bennett, Tipton, plans by Thomas G. Medland, 216½ Fourth St., Logansport, 2 story, 110x140 ft. brick, concrete, stone grade school, **$300,000.**

Kan., Hays—HOSPITAL—Hadley Memorial Hospital, Hays, plans by C. W. & J. A. Shaver, Salina, hospital, **$400,000.** CD 6/17.

La., New Orleans—APARTMENT DEVELOPMENT — Frances K. & John L. Hermann, c/o Shourds, Mogabgab & Bean, archts., Audubon Bldg., apartment development. Approx. **$500,000.** CD 8/25.

Minn., St. Paul—SCHOOL—Maternity of the Blessed Virgin Parish, Rev. J. O'Donnell, pastor, Dale St. and Arlington Ave., plans by B. J. Knowles & Co., 504 Commerce Bldg., 2 story bsmnt., school, church and rectory. **$350,000.**

Neb., Omaha—HOME FOR AGED—Catholic Archdiocese, 2507 Cass St., plans by Steele, Sandham & Steele, Electric Bldg., home for aged. **$300,000.**

N. J., Burlington — INFIRMARY — Masonic Home & Charity Foundation of N. J., Burlington, plans by Hettel & Albert, 501 Cooper St., Camden, infirmary, **$275,000.**

N. Y., Bayside—SCHOOL—Our Lady of the Most Blessed Sacrament Roman Catholic Church, c/o William J. Boegel, archt., 516 5 Ave., New York, school at 202 St., northeast corner of 35 Ave. **$500,000.**

N. Y., Brooklyn — SYNAGOGUE — Temple Ahavath Scholam of Flatbush, 1601 Avenue R, plans by Prowler & Sushan, 1 Hansen Pl., 2 story synagogue alterations. **$250,000.**

N. Y., New York—STORE—211 E. 98 St. Corp., 140 Riverside Dr., plans by William I. Hohauser, 1841 Broadway, store alterations, salesrooms and offices at 1901 Second Ave. **$250,000.**

N. Y., New York—BANK—Dollar Savings Bank, 2792 Third Ave., plans by Adolph L. Muller, 286 5 Ave., altering 2 story bank at 2516 Grand Concourse. **$335,000.**

N. Y., New York—SCHOOL—Roman Catholic Church of Sacred Heart, 1253 Shakespeare Ave., plans by Post Tooker & Assoc., 101 Park Ave., 3 story school at Nelson Ave., northeast corner of 168 St. **$400,000.**

N. Y., Rego Park—APARTMENT—B. & D. Realty Corp., c/o M. Rothstein & Son, archt., 186 Joralemon St., Brooklyn, 3 story apartment at 65 Rd., southeast corner of 99 St. **$185,000.**

O., Cincinnati—RESIDENCES—Malaer & Carabin, 6219 Englewood Ave., plans by Wm. H. Brynes, Jr., 1542 Madison Rd., 25 one story bsmnt. concrete, brick residences, Sycamore Twp. **$250,000.**

O., Cincinnati—CHURCH, RECREATIONAL BLDG.—Pleasant Ridge Presbyterian Church, 5950 Montgomery Rd., plans by Hake & Hake, 2400 Gilbert Ave., engr. and archt., brick, stone, concrete church and recreational bldg., etc. **$425,000.** W. R. Galloway, chn. Bldg. Planning Comm., engr.

●**O., Lakewood**—HIGH SCHOOL—Catholic Charities Corp., 1027 Superior Ave., Cleveland, high school at Nicholson and Detroit Ave., on 10½ a. tract. **$1,000,000.**

O., Shaker Heights—APARTMENT—Benjamin Lederman, 2026 E. 107 St., Cleveland, plans by T. V. Nichols, 16828 Kinsman Rd., 5 story 96x120 ft. brick and steel apartment, Moreland Blvd., crescent of Warrensville Center Rd. Approx. **$250,000.**

Ore., Portland—OFFICE—Lloyd Corp., 720 N. E. 12 St., plans by Whitehouse, Church, Newberry & Roehr, Builders Exchange Bldg., 2 story 116x325 ft. store-office at N. E. Union and Klingsworth Sts., **$750,000.** CD 9 7/45.

Ore., Salem—APARTMENT—V. N. Jones & Assoc., Republic Bldg., Seattle 1, Wash., 3 story rein.-con. apartment, **$806,300.**

Pa., Meadville—HOSPITAL—Spencer Hospital, Meadville, plans by Wilbur Watson Assoc., 4614 Prospect Ave. S.E., Cleveland, O., 3 story 60x96 ft. and 51x113 ft. T-shaped, brick, steel frame hospital addn., 53x184 ft. nurses home, **$500,000.**

Pa., Pottstown—HOTEL—Corporation, c/o Pottstown Chamber of Commerce, Pottstown, plans by Stopper & Lichty, 2112 Spruce St., Phila., hotel. **$250,000.**

R. I., Cranston — HOSPITAL — Osteopathic Hospital, 1763 Broad St., Providence, plans by Monahan & Meikle & Carl Johnson, 255 Main St., Pawtucket, 2 story bsmnt., 45x62 ft. brick, steel hospital wing addn., Norwood Ave., **$300,000.**

Tex., Houston—SCHOOL—St. Peters Catholic Church, 6220 LaSallette St., plans by Golemon & Rolfe, 911 Woodrow Ave., 2 story, structural steel frame, face brick, etc. parish school, rein.-con. slab fdn., between Griggs Rd and Old Dowlen St., **$250,000.** W. P. Moore, 4605 Montrose Blvd., consult. engr.

Tex., San Antonio—APARTMENT—Claude Hill, 3130 Broadway, efficiency apartment units and 2nd story to commercial bldg., rock, concrete type constr. on Austin Hy., **$250,000.**

Wis., Milwaukee—MEMORIAL UNION BLDG.—Marquette University, 615 N. 11 St., Zone 3, plans by Brust & Brust, 135 W. Wells St., Zone 3, 2 story 120 x 180 ft., concrete, steel, brick memorial union bldg., **$350,000.**

Man., Winnipeg—HOUSING—C. T. Lount, 211 Graham Ave., 40 dwellings. **$75,000.**

Ont., Willowdale—HOUSING—Upper Canada Estate Ltd., 92 Adelaide St., Toronto, 32 dwellings. **$260,000.**

Que., Chicoutimi—CHURCH—Roman Catholic Parish of St. Joachim, Chicoutimi, concrete, steel, stone church, **$250,000.**

●**Que., Quebec City** — HOTEL — Esplanade Hotel Co. Ltd., Ascenseur Bldg., plans by W. Lacroix, 137 St. Peter St., hotel. **$2,000,000.**

Que., Verdun — CHURCH — Parish of St. Thomas More, Rev. E. J. Lapointe, pastor, plans by J. Sawyer, 1207 Guy St., Montreal, rein.-con. steel, brick church, corner Bannautyne and Moffat Aves. Approx. **$300,000.**

INDUSTRIAL BUILDINGS

Ga., Columbus — PLANT ADDN.—Kinnett Dairies, Inc., c/o James J. W. Biggers & Assoc., archts., Flowers Bldg., Columbus, dairy plant addn., **$100,000.**

Ga., Columbus—PLANT—Wells Dairies Cooperative, 2320-30 Wynnto Rd., dairy plant, **$500,000.**

●**Ill., Peoria**—PLANT—Central Illinois Light Co., 316 S. Jefferson Ave., R. S. Wallace plant addn. **$8,500,000.**

Ky., Louisville — GARAGE—Southeastern Greyhound Lines, 434 W. Broadway, garage, 13 and Breckenridge Sts., Approx. **$200,000.**

Me., Bangor — WAREHOUSE — Sears Roebuck & Co., 4640 Roosevelt Blvd., Phila., Pa., plans by Eaton A. Tarbell & Assoc., 833 Harlow St., Bangor, warehouse, **$200,000.** CD 7/21.

Minn., Litchfield—PLANT—Farm Feed Mfg. Co., Litchfield, feed mfg. plant, **$100,000.**

N. Y., Ridgewood — PLANT—Cooperdale Dairy Co., 88-56 Cooper Ave., Forest Hills, plans by Lama, Proskauer & Prober, 383 Pearl St., Brooklyn, 2 story milk plant on Cooper Ave., near Metropolitan Ave. **$300,000.**

Tenn., Nashville—GARAGE—Liddon Pontiac Co., Broadway, garage. **$250,000.**

Tex., Corpus Christi — WAREHOUSE, etc. —Corn Products Refining Co., Shell Rd., dock warehouse, **$90,000;** docks. **$100,000.**

Tex., Parish—PLANT—DeKalb Hybrid Seed Co., DeKalb, Ill., nursery plant. **$100,000.**

W. Va., Williamson—STATION—Norfolk and Western R. R. Co., A. B. Stone, ch. engr., General Office Bldg., Roanoke, Va., freight station from J. P. Pettyjohn Co., 214 H St., Lynchburg, Va., **$450,000.**

Ont., Marmon Lake—SHAFT SINKING—Plator Gralouise Gold Mines Ltd., 414 Bay St., Toronto, shaft sinking.

●**Ont., Sarnia**—REFINERY—Sun Oil Ltd., 29 Basin St., Toronto, oil refinery, 150 acre site, **$20,000,000.** CD 2/12/47.

Que., Longueuil—PLANT—Leyland Motors Candada Ltd., 25 St. James St., Ville St. Pierre, remodelling bldgs. for manufacture of trucks and buses, **$300,000.** John McHughan, ch. engr.

UNCLASSIFIED

Colorado—RURAL DISTRIBUTION LINES —W. N. Clark, Electric Assn., Akron, 72 mi. rural distr. lines, generator plant, warehouse and facilities, Yuma Co., **$292,000.**

†**Fla., Jacksonville** — OIL TERMINAL Yards & Docks Annex, Navy Dpt., Arlington, Va., constructing fences, roads, utilities services, fire protection and collateral equip., **$395,188**; fuel flush and install. pump control valves etc., constructing facilities from tankers and dispensing vessels to trucks, rail and barge, **$599,000**; rehabilitating existing fuel oil handling facilities and machinery equip. and buildings, **$675,312**; dredging for pier extens. and mooring, **$320,000**, all foregoing at Navy Bulk Fuel Oil Terminal Plant.

●†**Fla., Mayport** — QUAY, etc. — Yards & Docks Annex, Navy Dpt., Arlington, Va., constructing quay and services with timber bulkhead, **$1,732,700**; dredging and revetment work, **$3,010,000**; rehabilitating existing facilities, **$177,300**, all foregoing at Carrier Base.

Ga., East Point—ELECTRICAL SYSTEM—City, bond election September 27, imprv. electrical system, **$150,000.**

†**Ga., Millen**—FISH HATCHERY—Dpt. Interior, C St. between 18 and 19 Sts., N. W., Wash. D. C., fish hatchery, **$250,000.**

Minn., Montevideo—SWIMMING POOL—City, A. E. Swenson, clk., J. J. Deneed, city mgr., voted **$100,000** bonds, municipal swimming pool.

Neb., Hastings—SWIMMING POOL—City, Hastings, bond election September 27, swimming pool. **$125,000.** CD 8/9.

N. M., Albuquerque — GAS LINES — Southern Union Gas Co., Burt Bldg., Dallas, Tex., addnl. natural gas distr. lines. Approx. **$200,000.**

N. Y., Little Neck—PLAYGOUND, COMFORT STATION—Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York, plans by Gustave Chirlian, 1420 Grand Concourse, New York, playgrounds and comfort station on south side of 80 Ave. between 261 and 262 Sts. **$120,000.**

North Dakota—RURAL DISTRIBUTION LINES—McLean Electric Co-operative, Garrison, 467 mi. rural distr. lines and sys. imprvs. **$660,000.** REA allot. Ulteig Eng. Corp., 1114½ Front St., Fargo, consult. engr.

Okla., Tulsa — TELEVISION STUDIO — Tulsa Television Co., 15 and Main Sts., plans by R. R. Stoffield, 3227 S. Columbia St., television studio and equip. **$100,000.**

Tenn., Lexington—TELEPHONE LINES—Southern Bell Telephone Co., Hurt Bldg., Atlanta, Ga., extend telephone lines into rural areas. **$200,000.**

Tex., Floresville—RURAL DISTRIBUTION LINES—Floresville Electric Light & Power Co., Floresville, rural distr. line extens. **$200,000.**

Washington—SNOWSHED—State Hy. Dpt., Olympia, replacing steel, concrete timber snowshed over Snoqualmie Pass Hy. at Lake Keechelus $500,000. W. A. Burge, state hy. dir.

Wash., Vancouver—ALARM SYSTEM—City, City Hall, city-wide alarm system for fire dpt., proposed for 1950 construction, **$100,000.**

New Brunswick—RADIO AND TELEPHONE SYSTEMS — Government of Canada, Dpt. Transport, Ottawa, Ont., radio and telephone sys., terminal huts at North Head and St. George, Grand Manan, **$150,000.**

CONSTRUCTION REPORTS—Second Section

WATER SUPPLY

BIDS ASKED

September 28

W. Va., Triadelphia—Town, water distr. sys. J. P. Blundon, P. O. Box 268, Keyser, engr.

September 29

†N. C., Cherokee—Bureau Indian Affairs, Dpt. Interior, Branch of Bldgs. & Utilities, Edward A. Poynton, chief, Interior Bldg., 19 and C Sts. N.W., Wash 25, D. C., waterlines, concrete storage reservoir and valve pit, Proj. No. 331-291.

October 1

Ky., Jenkins—Kentucky Water Co., Jenkins, exten. waterlines to Marshalls Branch Coal Portal, $50,000.

Bids Asked

Tex., Houston — Southern Builders, Inc., Greenway Park, c/o Sterling Hogan, 1200 Givens St., c. i. waterlines. $35,000.

LOW BIDDERS

Fla., Ocala—City, Sept. 9, water treatment plant, from F. H. McGraw Co., First National Bldg., Pittsburgh, Pa., **$266,105.** CD 8/1.

CONTRACTS AWARDED

Ill., Galesburg—City, Alfred Nystrom, clk., City Hall. WW imprvs., incl. watermains, installations, rehabilitation gate valves, to Caldwell Eng. Co., Jacksonville, **$235,649***** elevated steel water tank, to Chicago Bridge & Iron Co., 332 S. Michigan St., Chicago, **$186,705***** storage reservoir and well station imprv. to Oscar Maguire, Galesburg, **$255,590 ***** deep well, to Thorpe Well Co., 2340 6 Ave., Des Moines, Ia., **$68,680.** Grand total $716,924. Bids 8/11. CD 7/15.

SEWERS, WASTE DISPOSAL

BIDS ASKED

September 26

Md., Towson—Comrs. Baltimore Co., Court House, approx. 2,970 lin. ft 15- to 36-in. reinf.-con. pipe, 96 lin. ft. corrugated metal pipe, inlets manholes, transition structure, etc., Contr 171-D. Plans deposit $5. Wm. F. Neale, ch. engr.

September 28

Man., Winnipeg — Chn. Com. P. Utilities, Winnipeg trunk sewer, c. conc. 4 streets, for Municipality. Plans deposit $10. W. D. Hurst, 223 James Ave., engr. CD 2/11.

Bids Asked

Tex., Houston — Southern Builders, Inc., Greenway Park, c/o Sterling Hogan, 1200 Givens St., sanitary sewer lines. $55,000.

LOW BIDDERS

Fla., Ocala — City, Sept. 9, sanitary sewer imprvs., from F. H. McGraw Co., First National Bldg., Pittsburgh, Pa., **$416,493.** CD 8/1, under Water Supply.

Ill., Chicago — Cook Co., County Bldg., Edens Sewer, Chase Rd. to Cross Point Rd., from Louis Sculley, 6127 N. Hiawatha St., **$148,042***** Edens Sewer from Gross Point Rd to Dempster St., from Santucci Constr. Co., Skokie, **$108,149***** Edens Superhighway Bridge and Pumping Station from Thomas McGuire Co., Forest Park, **$348,457.**

N. C., Durham — City, R. W. Flack, mgr., rejected bids Sept. 1, sewer and water extens. L.B. **$99,745.** CD 2/17/47.

Tex., Beaumont — City, drainage sys., Bowie, Hickory and Orient Sts., from Lancaster & Love Co., Beaumont, **$205,450.** R. C. Black, city engr. CD 10/17/47.

CONTRACTS AWARDED

S. C., Rock Hill — City, Rock Hill, sanitary sewer imprvs. to A. H. Guion Co., Wilkinson Blvd., Charlotte, N. C., **$834,830.** Bids 8/12. CD 8/18, under LB.

Tex., Odessa — City, sewers, own forces, **$60,000.** Joe E. Ward, Harvey-Snider Bldg., Wichita Falls, engr. CD 4/28.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

September 27	**September 30**
North Carolina	**North Dakota**
Manitoba	

LOW BIDDERS

Calif., San Francisco — Dpt. P. Wks., City Hall, Aug. 31, viaduct, Junipero Serra and Alemany Blvd., from Granite Constr. Co., Box 900, Watsonville, **$288,888.** CD 9/14/45.

Ill., Chicago—Cook Co. County Bldg., Sept. 7, Tower Rd., grade separation over Edens Superhighway, from States Imprvt. Co., 30 N. La Salle St., **$188,744***** Willow Rd. grade separation over Edens Superhighway, from Fred Lorenz Inc., Chicago Heights, **$395,858***** Winnetka Rd. grade separation over Edens Superhighway, from Superior Concrete Constr. Co., 5113 S. Woodlawn St., **$272,370.** CD 5/4/45.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

September 27	**September 28**
Massachusetts	**Maine**
North Carolina	**September 30**
Ohio	**North Dakota**
	October 5
	New York

September 26

Mass., Boston—City, P. Wks. Dpt., City Hall Annex, sheet asph. Centre St., etc., Roxbury. Approx. $50,000. Plans deposit $2.

October 3

Miss., Aberdeen—Monroe Co., c/o County Clerk, Aberdeen, imprv. 4 mi. roads.

October 19

†Tenn., Oak Ridge—Roane Anderson Co., P. O. Box 456, imprv. roads, walks and planting, TDU T and U areas, Contr. No. W-7401-eng-115, Inv. No. 50-9. Plans deposit $15.

Bids Asked

Tex., Houston — Southern Builders, Inc., Greenway Park, c/o Sterling Hogan, 1200 Givens St., rein.-con. paving. $60,000.

LOW BIDDERS

Illinois—State Hy. Dpt.,, Springfield, Sept. 13, c. conc. patching U. S. Rt. 460, White, Jefferson and Franklin Counties, and c. conc. patching U. S. 67 and 36, Ill. Rt. 104, Scott, Morgan, Sangamon and Pike Counties, from Erie Bolander Constr. Co., Winchester Rd., Libertyville, **$71,750** and **$70,282** respectively ***grading 0.68 mi. U. S. Rt. 66, Montgomery Co., from W. G. Hollenbrak & Co., 2319 Vermont St., Quincy, **$87,722***** c. conc. patching U. S. Rts. 24, 45 and 52, Iroquois, Ford and Kankakee Counties, from Kenny Constr. Co., 111 W. Washington St., Chicago, **$72,299***** c. conc. patching U. S. Rts. 34 and 150, Ill. Rt. 116, Knox, Warren, Fulton and Peoria Counties, from H. H. Gunther Constr. Co., 600 E. Main St., Galesburg, **$72,445***** c. conc. patching U. S. Rts. 34, 51 and 52, LaSalle, Marshall and Woodford Counties, from Trompeter Constr. Co., 2428 4 St., Peru, **$65,726***** h. conc. 4.89 mi. U. S. Rt. 24, Peoria Co., from Seneca Petroleum Co., 439 W. 33 St., Chicago, Zone 16, **$54,352***** conc. patching Ill. Rts. 78, 90, 116, 9 and U. S. Rt. 150, Peoria, Tazewell, Woodford and McLean Counties, from Jansen & Schaefer, 1500 Broadway, Rankin, **$53,209***** conc. patching Ill. Rt. 3 and U. S. Rt. 45, Saline, Randolph, Gallatin and White Counties, from R. W. Ford, 704 S. Market St., Marion, **$98,300.** CD 9/6.

Ill., Chicago — City, City Hall, Zone 2, c. conc. or b. conc. Aug. 29, paving 3 mi. median strip, W. Irving Park Rd. from N. Pulaski to Ashland Aves. and 2.5 mi. W. Irving Park Rd., from N. Austin to Pulaski Rd., from White Constr. Co., 1831 W. Columbia St., Zone 26, **$87,909** and **$69,954** respectively. CD 8/24.

Kentucky—State Hy. Dpt., Frankfort, Sept. 9, local bank or creek grav. 11.919 mi. Midland-Yale Rd., RS 8-164, Perry Co., and traffic bound limestone 7.212 mi. Knob Lick Rd., RS 69-290, Lincoln Co., from J. C. Codell Winchester, **$108,382,** and **$66,417** respectively*** bit. surf. Class C-1 and A-2 seal 9.25 mi. Kettle-Littrell-Tennessee Rds., Fine Rt. RS 29-287, Cumberland Co., from Hinkle Contg. Co., Paris, **$75,618***** traffic bound limestone 4.682 mi. Manse-Carterville Rd., RS 40-226, Garrard Co., from George H. Chook Constr. Co., McClure Bldg., Frankfort, **$75,118***** traffic bound slag 5.687 mi. Greenslait-Lynn Rd., RS 45-231, Greenup Co., from Swymn Contg. Co. Inc., Greenup, **$54,392***** traffic bound limestone 5.428 mi. RS 82-443 and RS 82-463, Meade Co., from Nalley, Ballard & Saltsman, Bardstown, **$52,246***** traffic bound limestone 4.086 mi. RS 88-298 and RS 88-338, Morgan Co., from Licking River Limestone Co., West Liberty, **$66,656***** traffic bound limestone 4.926 mi. Ky. 181-Horeb-Todd Co. line Rd., RS 89-523, Muhlenberg Co., from Ruby Constr. Co., Madisonville, **$73,992***** traffic bound limestone 9.104 mi. Burr-Brush Creek-Great Saltpeter Cave Rd., RS 102-337, Rockcastle Co., from Paul A. Teegarden Inc., Columbus, Ind., **$123,-787***** traffic bound limestone 5.557 mi. RS (109-308) (109-348), Taylor Co., from Martin Bros. & Fred E. Nance, Campbellsville, **$53,528 ***** traffic bound limestone 5.291 mi. Campton-Gosneyville Rd., RS 119-163, Wolfe Co., from Lovell & Hart Constr. Co., Lexington, **$91,681.** CD 8/24.

Ohio — State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15, rejected bids Aug. 31, 2.736 mi. Type T-35, U.S.R. 20A, Fulton and Lucas Counties, **$78,300;** 2.221 mi. Type T-35, U.S.R. 52, Adams Co., **$30,425.** CD 8/19.

Tex., Pasadena—City, City Hall, Sept. 7, street paving from Holland Page Co., Georgetown Rd., Austin, **$109,823.** George H. Smith, c/o owner, engr.

CONTRACTS AWARDED

Kan., Scott City—City, John L. Whitsch, clk., City Hall, street imprvs., to Broce Constr. Co., Dodge City, **$117,547.** Est. $150,509. Bids 9/8. CD 8/31.

Ohio — State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15, 2.663 mi. Type T-71 and structure, Bridge No. HI-50-287 over Rocky Ford Creek, U.S.R. 50, Highland and Ross Counties, to W. H. Ringwald & Sons Co., Inc., 42 E. 2 St., Chillicothe, **$445,674** est. $561,100***0.284 mi. Type T-32 and structure, Bridge No. MN-37-84 over Scioto River, S. R. 37, Marion Co., to Nelson T. Bohan, 549 E. Court St., Urbana, **$77,001** est. $106,500***2.72 mi. Type T-35, S. R. 28, Highland Co., to O. E. Liller, 207 S. Toland St., London, **$56,459** est. $63,950***5.131 mi. Type T-35, S. R. 43, Portage Co., to The McCourt Constr. Co., 720 Home Ave., Akron, **$149,604** est. $168,350. Grand total $728,738. Bids 8/31. CD 8/19.

Tex., Lufkin — Angelina Co., Lufkin, farm-to-market road, force account. **$100,000.**

Tex., Odessa — City, street paving, own forces. **$75,000.** Joe E. Ward, Harvey-Snyder Bldg., Wichita Falls, engr.

EARTHWORK, WATERWAYS

BIDS ASKED

September 28

†New Hampshire — U. S. Eng., Army Base, Boston 10, Mass., maintenance dredging in Lake Winnepesaukee, Serial No. CIVENG-19-016-50-12. CD 8/26.

LOW BIDDERS

Idaho, Carey—Little Wood River Irrigation Dist., Carey, Sept. 13, raising Little Wood River dam, from Barnhart & Wheeler, 310 Monroe Ave., Pocatello, **$110,250.** R. J. Briggs & Assoc., 619 Grove St., Boise, engrs. CD 6/27.

†North Dakota—Bureau Reclamation, Dpt. Interior, Billings, Mont., Sept. 7, earthwork and structures for main canal relocation, Painted Woods Creek drain and misc. structures, Spec. R6-Bid-1 (Region 6). Buford-Trenton Proj., Williams and McKenzie Counties, from Albert Lalonde Co., Sidney, Mont., **$76,919.** CD 8/23.

†Oregon—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., Sept. 8, mfg., del. tainter valve operating machinery for McNary Dam Navigation Lock, Serial No. CIVENG-45-164-50-17, from Northwest Marine Iron Wks. 2516 N. W. 29 St., Portland, **$88,951.** CD 8/17.

†Virginia—U. S. Eng., foot of Front St., Norfolk, Aug. 31, maintenance dredging, approx. 293,000 cu. yds. Parran River, CIVENG-44-110-50-15, from Norfolk Dredging Co., Campostella Wharf, Norfolk, **$92,541.** Est. $120,337.

CONTRACTS AWARDED

†Idaho—Bureau Reclamation, Dpt. Interior, Boise, clearing 250 acres of Cascade reservoir site south of Arling, Payette Div., Boise Proj., Spec. R1-50 (Region 1), to Vernon Brothers Co., 1406 Orchard St., Boise, **$28,500.** Bids 8/18, awarded 8/31. CD 8/4.

†Montana—U. S. Eng., 4735 E. Marginal Way, Seattle, 4, Wash., flood protection works on Clark Fork, Serial No. CIVENG-45-108-50-9, Missoula, to H. G. R. Constr. Co., Inc., Great Falls, **$29,820.** Est. $46,504. Bids 9/7. CD 8/23.

Tex., Lufkin — Angelina Co., Lufkin, open drainage, levees, ditching, **$42,000;** earthen water conservation storage, **$40,000,** force account. CD 2/7/46.

†Tex., Orange — Bureau Reclamation, Dpt. Interior, Interior Bldg., 19 and C Sts. N.W., Wash. 25, D. C., and Sabine-Neches Co. Reclamation Bd., Orange, drainage, revetments, widening, straightening creeks, terracing, own forces. **$175,000.** Ray J. Lyman, c/o Orange County Reclamation Dist., Orange, engr.

†Wisconsin—U. S. Eng., 428 Federal Bldg., Milwaukee, Zone 3, revetment reconstruction at Sturgeon Bay and Lake Michigan Ship Canal, CIVENG-47-013-50-2, to Roen Salvage Co., Sturgeon Bay, **$35,280.** Bids 8/30. CD 7/26.

AIRPORTS AND AIRBASES

BIDS ASKED

September 26

Mass., East Boston—STORM DRAINAGE, etc.—Commonwealth of Massachusetts, State Airport Management, Comrs. Office, Logan Airport, East Boston, storm drainage sys., incl. pipe, open channel, catch basins, headwalls, Approx. $150,000, and plane loading apron, Approx. $200,000, at Logan Airport. Plans deposit $25 each. CD 4/13/48.

CONTRACTS AWARDED

●†Calif., Point Mugu—TECHNICAL BUILDINGS—Officer in Charge of Construction, U. S. Naval Air Missile Test Center, Point Mugu, technical buildings, incl. 60,000 sq. ft. test bldg., 2 story, 30,000 sq. ft. project bldg. and 2,200 sq. ft. transmitting bldg., to Alliance Constr. Co., 35 N. Raymond Ave., Pasadena, **$1,191,-070.** Bids 8/25, awarded 9/8. CD 9/1, under LB.

Tenn., Knoxville—AIRPORT TERMINAL—Tennessee Valley Aero Development Corp., 510 Grainger St., airport terminal bldg., Rutledge Pike, to George W. Reagan, 510 Grainger Ave. Approx. **$50,000.**

N. S., Sydney—AIRPORT IMPRVS.—F. T. Collins, secy., c/o Dpt. Transport, Hunter Bldg., Ottawa, Ont., runway imprvs., and airport development, to Raynor Constr. Co. Ltd., Moncton, N. B., **$581,000.** Est. $75,000. Bids 7/18, awarded 9/7. CD 7/11.

PUBLIC BUILDINGS

BIDS ASKED

September 26

●Que., Montreal North — HOUSING — J. J. O'Sullivan, engr., c/o Central Mortgage & Housing Corp., 1253 McGill College Ave., Montreal. 216 dwellings, or 54 semi-detached duplexes. (Montreal North 1/49.) Approx. $800,000-$1,500,000. Plans deposit $10. CD 5/19.

September 28

●Ill., Chicago — HOSPITAL — University of Illinois, Urbana, 14 story, brick, steel, stone research and education hospital. Addn. $9,000,000. Holabird & Root & Burgee, 180 N. Wabash St., archts.

Tenn., Chattanooga — STEAM PLANT — At office Howard J. Sears, mgr. Hamilton Co., Courthouse, steam plant for William L. Berk Memorial Hospital. Plans deposit $10. Selmon T. Franklin, 421 Poplar St., archt.

September 29

Tenn., Gallatin—HIGH SCHOOL—Bd Educ., V. G. Hawkins, supt., Courthouse, Union High School. Plans deposit $200. Howard, Hickerson & Jordan, Inc., 304½ Third Ave. N., Nashville, archt.-engr.

September 30

●Tex., Houston — SCHOOLS — Houston Independent School Dist., 1600 Washington St., masonry school, Aldine-Westfield Rd area, $600,000; brick Wesleyan Road School, concrete slab fdn. Approx. $270,000. Stayton Nunn, 2425 Ralph St., co-archt. archt., Ernest L. Shult, 5009 Fannin St., archt., W. P. Moore, 4605 Montrose St., engr., Ray L. Jenkins, 4316 Blossom Ave., mechanical engr. CD 1/5; concrete, steel, hollow tile, brick, Lamar High School addn. and gymnasium, concrete slab fdn., $250,000. Stayton Nunn, 2425 Ralph St., co-ord. archt., Kenneth Franzheim, 2306 Crawford St., archt. CD 2/17.

October 4

N. Y., Brooklyn—HOUSING IMPRVS.—New York City Housing Auth., 63 Park Row, New York Zone 7, street and yard imprvs for Albany Houses, Proj NYS-40, in area bounded by Park Pl., Albany, St. Marks and Troy Aves. Plans deposit $25. CD 6/24/48.

N. C., Aberdeen—SCHOOL, etc.—Moore Co. Bd. Educ., Aberdeen, school and gymnasium. Plans deposit $50. Wm. H. Deitrick, 115 W. Morgan St., Raleigh, archt.

Tenn., Memphis—CANCER LABORATORY —University of Tennessee, Knoxville, cancer research laboratory at Memphis Branch of University of Tennessee. $500,000. Plans deposit $100. Extended date. Walk C. Jones-Walk C. Jones, Jr., 1245 Poplar St., archts. CD 8/24.

LOW BIDDERS

●†Ill., Chicago — HOSPITAL — Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash., 25, D. C., Sept 13, general medical surgical hospital, West Side, from J. L. Simmons Co., 155 E. Wabash St. **$7,093,900**; elevators, from Murphy Elevator Co., 128 E. Main St., Louisville, Ky., **$309,072**. CD 8/26.

●Ill., Quincy — COURT HOUSE — Bd. Supervs. Adams Co., and City of Quincy Old City Hall, Aug. 25, 3 story concrete, steel, brick, stone county court house and city hall, from L. & R. Constr. Co., 6669 Latta Pl., St. Louis, Mo., **$1,729,885**. Hafner & Hafner, 510 Main St., assoc. archts. CD 7/25.

●Mass., Boston — HOUSING — City of Boston Housing Auth. 10 Post Office Sq., Sept. 7, Cathedral Housing, South End, from M. S. Kelliher Co., 294 Washington St., **$4,978,965**. CD 8/16.

Mass., Chatham — SCHOOL — Town, Bldg. Comm., Selectmen's Office, Sept. 9, high school addns., alterations. Deport Rd., from J. L. Marshall & Sons, Inc., 560 York Ave., Pawtucket, R. I. **$452,800**. CD 8/29.

Mass., Foxboro — REAR CENTER AND DINING HALL — Commonwealth of Massachusetts, Dpt. Mental Health, 100 Nashua St., Boston, Sept. 9, rear center and dining hall reconstruction, Constr. 1, State Hospital, from Palmer-Zoppo Co., 2270 Dorchester Ave., Dorchester, **$608,842**. CD 8/16.

●N. Y., Forest Hills—SCHOOL—Supt. School Buildings, Design & Constr., 49 Flatbush Ave. exten., Brooklyn, Zone 1, Sept. 7, general contract P. S. 165, 150 St. between 70 Rd. and 71 Ave., from Colmar Constr. Co., 364 Gold St., Brooklyn, Zone 1, **$1,187,200**. CD 8/17.

Tenn., Whitehaven — SCHOOL — Shelby Co. Bd. Educ., Memphis, school, from Sam P. Maury Constr. Co., 534 Adams Ave., Memphis, **$509,000**.

Wis., Milwaukee—CELL HOUSE—Milwaukee Co., Courthouse, Zone 3 Sept. 9, general contract 4 story, bsmnt., 176x396 ft. cell house, from Siesel Constr. Co., 514 E. Ogden Ave., Zone 2, **$892,743**. CD 8/17.

●N. B., Grand Falls—POWER PLANT—New Brunswick Electric Power Comn., 55 Canterbury St., Saint John, cancelled bids to have been opened Sept. 13, steam driven electric generating plant, **$2,200,000**.

CONTRACTS AWARDED

Mass., Leominster — HOUSING — City of Leominster Housing Auth., Leominster, veterans housing Proj. 200-1, to B. Perini & Son, 73 Mountwait Ave., Framingham, **$597,777**. Bids 8/31, awarded 9/9. CD 9/12, under LB.

Mass., Needham — HOUSING — Town of Needham Housing Auth., 99 School St., veterans housing, to Bennett-Stewart Co., Inc., 105 Newbury St., Boston, **$627,898**. Bids 8/24, awarded 9/8. CD 9/12, under LB.

●†Mo., Kansas City — HOSPITAL — U. S. Eng., 601 Davidson Bldg., Kansas City, veterans administration hospital, Serial No. Eng., 23-028-50-1, to Del Webb Constr. Co., S. 23 Ave., Phoenix, Ariz., **$7,933,000**. Bids 8/24, awarded 9/9. CD 8/26.

●N. Y., Dannemora — ADMINISTRATION — Bureau Contracts & Accounts, Albany, Cell Block H (Bldg. 33) for 525 inmates, and Administration Bldg. 4 addns., etc., to Mutual Constr. Corp., 205 E. 42 St., New York, Zone 17, **$1,593,450**. Bids 8/3. CD 8/16, under LB.

●N. Y., East Meadow — HOSPITAL — Bd. Supervs. Nassau Co., Old County Court House, Mineola, General contract hospital alterations, addn., to Cauldwell-Wingate Co., 101 Park Ave., New York, Zone 17, **$6,587,000*****ventilating and air-conditioning, to Arthur E. Magher Co., Inc., 175 Christopher St., New York, Zone 14, **$827,364*****plumbing and drainage, to Lavin Weil Plumbing Corp., 328 E. 33 St., New York, Zone 16, **$727,000*****electrical work to Eastern States Contractors, 2209 Bridge Plaza North, Long Island City, **$615,000**. Grand total $8,756,364. Bids 8/30. CD 6/29.

●N. Y., Rome — SCHOOL — Bd. Educ., N. George St., Junior High and Elementary School, to F. D. Rich Co., Inc., 101 Park Ave., New York, Zone 17. Est. **$3,000,000.** Bids 7/15. CD 7/7.

COMMERCIAL BUILDINGS

SOON LETS CONTRACT

Calif., Ventura — MATERNITY — Foster Memorial Hospital, Ventura, soon lets contract 2 story, 20,000 sq. ft., concrete Goodyear Maternity addn. $275,000. Allison & Rible, 625 S. Westmoreland St., archts.

Mass., West Roxbury — SCHOOL — Saint Theresa Church, Rev. Charles A. Donahue, Pastor, 10 St. Theresa Ave., soon lets contract 2 story, bamnt., brick school. Approx. $250,000. Maginnis & Walsh, 126 Newbury St., Boston, archts. CD 5/13.

Tenn., Clarksville—OFFICE—Southern Bell Telephone Co., Hurt Bldg., Atlanta, Ga., soon lets contract dial and toll office. CD 9/7.

Tenn., Jackson — CLINIC — Jackson Clinic, c/o J. Frazier Smith, archt., Goodwyn Institute Bldg., Memphis, soon lets contract, clinic. CD 7/14.

Tex., Houston — OFFICE — Albert J. De-Lange trustee, Guaranty Bldg., soon lets contract 4 story, bsmnt. office, $250,000. Northrupp & Northrupp, c/o owner, engrs. CD 9/13.

LOW BIDDERS

Miss., Jackson — CHURCH — First Presbyterian Church, c/o low bidder, Sept. 8, church, from Dye & Mullings, P. O. Box 485, Columbia. **$601,492**. CD 7/27/46.

N. H., Plymouth — HOSPITAL — Sceva Speare Memorial Hospital, c/o Sceva Speare, 73 Concord St., Nashua, Sept 8, hospital, from T. W. Cunningham, Inc., 937 Congress St., Portland, Me., **$457,700**. CD 8/29.

N. C., Hickory — CHURCH — First Methodist Church, Hickory, Sept. 6, church, from Hickory Constr. Co., Hickory, **$116,800**. Henry Irven Gaines, 32 Wall St., Asheville, archt.

N. C., Thomasville—CHURCH—The Memorial Methodist Church, Thomasville, rejected bids Sept. 6, church, L. B. **$419,222**. CD 4/6.

CONTRACTS AWARDED

●Fla., Jacksonville—BANK, etc.—Atlantic National Bank, 121 W. Forsyth St., 4 story, basmnt., 105x157 ft., Rockville Granite and White George Cherokee Marble bank, adjoining existing bank and office, to George Auchter Co., foot of 56 St. Zone 1, **$1,800,000**. Awarded 9/9. Bank Bldg. & Equip. Corp. of America, 906 Sidney St., St. Louis, Mo., archts. and engrs.

Ill., Chicago — APARTMENT — Van Norman Constr. Co., 2969 S. Vernon St., Zone 16, 5 story, brick, rein.-con. apartment, incl. 47 units, 6826 S. Oglesby Ave., Zone 49. Owner builds. **$285,000**. A. R. del Blanco, 4938 W. Irving Park Blvd., Zone 41, archt.

●Ill., Chicago—SCHOOL—Weber High School, 3636 Wolfram St., general contract 2 story, brick, concrete, steel, stone school, to George Sollitt Constr. Co., 109 N. Dearborn St., approx. **$1,000,000**. McCaughey & Assoc., 3 S. Prospect St., Park Ridge, archts. CD 8/8.

●Md., Baltimore—APARTMENTS—The Westland Gardens Co., 11 E. Fayette St., 62 apartments, Westland Blvd., Courtney Rd., Belwood Green, Westland Hills Division, to Welsh Homes, Inc., 11 E. Fayette St., **$3,437,800**.

N. J., Montclair — STORE — Hahne & Co., 409 Broad St., Newark, South Park & Church Sts., to The Ferber Co., 16 Johnson Ave., Hackensack, Approx. **$600,000**. Fellheimer & Wagner, 155 E. 42 St., New York, 17, N. Y., archts.

●N. Y., Brooklyn — APARTMENT — Fred C. Trump, 119 Remsen Ave., Zone 12, 23 six story apartments to be known as Beach Haven bounded by Shore Dr., Belt Parkway, Ocean Parkway, McDonald Ave. and Avenue Z, at Brighton, Owner builds, **$16,000,000**. Seelig & Finkelstein, 153 Pierrepont St., Zone 2, archts.

●N. Y., East Hills (P. O. Islip)—HOUSES—G. A. Metzger & Co., Old Westbury Rd., Roslyn Heights, 109 one family houses, on 30 acre site. Owner builds. Approx. **$2,000,000.** Philip Resnyk & Edward Tyler, c/o owner, archts.

●N. C., Asheville—APARTMENT—Edgewood Knoll Apartments, c/o contractor, apartment development to Robinson Bros. Constr. Co., 841 Merrimon Ave., Approx **$1,500,000.**

Pa., Harrisburg — APARTMENT — J. W. Kline & Assoc., 210 Walnut St., 5 three story, brick, concrete apartments, Hale Ave. and Mongolia Dr., to Shelley-Spera Constr. Co., 227 State St. Approx. **$800,000,** B. E. Starr, 410 N. 2 St., archt. CD 5/6.

S. C., Camden — APARTMENT — Kirkwood Apartments, c/o contractor, 30 apartment units, to Harllee-Quattlebaum Constr. Co., Florence. Approx. **$250,000.**

Tenn., Memphis—CHURCH—Bellevue Baptist Church, c/o contractor, church, to Foster & Creighton Co., American Natl. Bank Bldg., Nashville. Approx. **$900,000.** Bids **8/26.** CD 9/12, under LB.

S. C., Rockingham — COLLEGE — Reverend Sisters of Charity, Rockingham college, to T. C. Gorman, Nova Scotia, Ltd., 123 Roy Bldg., Halifax, **$1,250,000.** C. A. Fowler, Capitol Bldg., Halifax, archt.

Que., Montreal East—DWELLINGS—S. D. Miller, 6999 Cote des Neiges Rd., one hundred 1 story, 25x36 ft., concrete houses, E. Sherbrooke St., to Ain & Zakuta Ltd., 6910 Wiseman Ave., Montreal, **$560,000.** Eliasoph & Bernkotiz, 1434 Ste. Catherine St. W., Montreal, archts.

INDUSTRIAL BUILDINGS

BIDS ASKED

September 30

Ky., Jenkins—COAL TIPPLE and CHUTE—Clinchfield Coal Corp., Pound, Va., coal tipple and chute. Approx. $100,000.

Ky., Toner—COAL TIPPLE and CHUTE—Blue Diamond Coal Co., Toner, coal tipple and chute. Approx. $150,000.

Ky., Whitesburg — COAL TIPPLE — Line Fork Cumnel Coal Co., Whitesburg, coal tipple, imprvs. $150,000.

October 4

●Md., Baltimore—BREW HOUSE, etc.—National Brewing Co., 1207 S. Conkling St., 9 story 52x61 ft., concrete, steel brew house, 7 story 65x69 ft., concrete, steel, brick storage, $1,500,000. Wm. F. Koelle Sons, Inc., Western Savings Fund Bldg., Phila., Pa., engrs.

SOON LETS CONTRACT

Ky., Wayland—COAL TIPPLE—Caney Elkhorn Coal Co., Wayland, soon lets contract coal tipple. Approx. $250,000.

Ky., Whitesburg — SALES and SERVICE — Boone Motor Co., Whitesburg, soon lets contract auto sales and service bldg. $100,000.

Mass., Newburyport—PLANT—Hytron Radio & Electronics Corp., 76 Lafayette St., Salem, soon lets contract 2 story, 100x270 ft. plant, Kent and Warren St. Approx. $68,000. R. C. Hanchel, 294 Washington St., Boston, engr.

LOW BIDDERS

N. D., Grand Forks—STEAM PLANT—Minnkota Power Co-operative, Grand Forks, Aug. 30, substructure for steam plant extens., from Fuel Economy Eng. Co., 510 New York Bldg., St. Paul, Minn., **$62,875.** CD 8/24.

CONTRACTS AWARDED

Ala., Andalusia — PLANT — Coca-Cola Bottling Co., c/o contractor, bottling plant, to Wilhoit Lumber & Constr. Co., Troy. Approx. **$75,000.** Bids 7/19. CD 7/13.

Ga., Columbus—WAREHOUSE—Swift Mfg. Co., 1410 6 Ave., cotton warehouse, to Independent Constr. Co., Columbus. Approx. **$175,000.**

Ill., Chicago— PLANT—Albert Schwill & Co., Ave. C and 103 St., Zone 17, steel, masonry, carpentry malting structures addn., to Carroll Constr. Co., 333 N. Michigan St., Zone 1, **$90,000.** Awarded 8/26. Alfred L. Meil, 6 N. Michigan St., Zone 2, archts.

Ill., Chicago — FACTORY — American Can Co., 6105-25 S. Oakley St., Zone 36, steel, brick factory addn., to La Salle Constr. Co., 343 S. Dearborn St., Zone 4. **$235,000.** Awarded 9/1. R. J. Love, 704 S. Michigan St., Zone 3, archt.

Ill., Chicago — FACTORY — Clinton Realth Assoc., 33 N. LaSalle St., Zone 2, reconstructing 3 story factory, 300 block on S. Des Plaines Ave., to Welso Constr. Co., 2345 S. Pulaski St., Zone 23, Approx. **$900,000.** Awarded 8/31. A. Epstein & Sons, 2011 W. Pershing, Zone 9, archts. CD 1/12, under Commercial Bldgs.

Ill., Chicago — SUBSTATION — Commonwealth Edison Co., 72 W. Adams St., Zone 3, electric power substation, 1141 W. Diversey Parkway, Zone 14, to Paschen Contractors, Inc., 2739 N. Elston St., Zone 47. **$144,000.** Awarded 9/6. Shaw Metz & Dolio, 208 S. La Salle St., Zone 4, archts.

●La., Elizabeth—MILL—Syndicate Paper Mill, Elizabeth, design and construction paper mill, to H. K. Ferguson Co., M. & M. Bldg., Houston, Tex., Approx. **$5,000,000.**

●Md., Baltimore — PLANT — Lord Baltimore Press, Greenmountain Ave. and Oliver St., 1 story, 400x444 ft., steel, brick, glass block printing plant, air-conditioning, railroad siding, Edison Hy. and Federal St., to Morrow Bros., Inc., 2315 N. Charles St., **$1,300,000.** CD 5/12.

S. C., Rock Hill — MILL, etc. — Gold-Tex Fabrics, Rock Hill, mill and warehouse addn.,

to S. A. Pope, Rock Hill, Approx. **$68,000.** CD 3/24/47.

●**Tex., Beaumont** — GENERATING UNIT — Gulf States Utilities Co., 362 Liberty St., addnl. 60,000 kw. electric generating unit, to Stone & Webster Eng. Corp., Mellie Esperson Bldg., Houston. Approx. **$3,000,000.** CD 6/30.

Tex., Fort Worth — PLANT — Consolidated Vultee Corp., Granta Lane, Unit 1, instrument plant, to Albert L. Smith, 3721 Bledsoe St., **$146,158.** CD 9/13.

Wis., Milwaukee—FACTORY—Western Machine Co., 121 N. Broadway, Zone 2, 1 story, 142x177 ft., concrete block, steel factory, concrete fdn. and floor, to Selzer-Ornst Co., 6222 W. State St., Wauwatosa, Zone 13. Strass-Boeck & Assoc., 5930 W. North Ave., Zone 8, engrs. CD 2/2.

Ont., Chatham—FACTORY—Singer Mfg. Co. Ltd., 165 St. Paul St., St. Johns, Que., 2 story, 25x150 ft. rein.-con. stone factory, to W. H. Cooper Constr. Co. Ltd., 7 Hunter St., Hamilton. Approx **$100,000.** N. A. Armstrong, 19 Melinda St., Toronto, archt.

Que., Montreal—PLANT—Belding Corticelli Ltd., 1445 Shearer St., 1 story, part bsmnt., 117x132 ft. rein.-con. frame knitting plant, air-conditioning, near Greenfield Park, to Anglin-Norcross, Ltd., 892 Sherbrooke St. W., Approx. **$150,000.** E. C. Miller, 485 McGill St., archts.; T. Pringle & Sons Ltd., 485 McGill St., engr.

UNCLASSIFIED

BIDS ASKED

September 30

Ill., Zion City — OUTDOOR THEATRE — Skokie Amusement Enterprises, Inc., 27 E. Monroe St., Chicago, Zone 3, outdoor theatre, grading, paving, etc., near here. **$450,000.** Irving M. Karlin, 1314 S. Wabash St., Chicago, 5, archt.

SOON LETS CONTRACT

●†**Colo., Littleton**—RACE TRACK—Centennial Turf Club, Cosmopolitan Hotel, Denver, soon lets contract race track, incl. grandstand and turf club, 7,500 seating club house, 1 story 20x70 ft. frame racing administration bldg. **$1,750,000.** Henry A. Koch, Chamber of Commerce Bldg., Denver, archt. Clarence W. Mayhew, 251 Post St., San Francisco, Calif., engr. CD 3/20.

Mississippi — RURAL DISTRIBUTION LINES — Pearl River Valley Electric Power Assn., Columbia, soon lets contract 122 mi. rural distr. lines, Marion Co. CD 7/1.

Oregon — RURAL DISTRIBUTION LINES— Benton-Lincoln Electric Co-operative, 561 Van Buren St., Corvallis, soon lets contract 74.41 mi. rural distr. lines, Benton and Lincoln Counties. James A. Brigham, c/o owner, engr. CD 6/10.

Que., Val d'Or—SPORTS CENTER—Olympia Palace, Inc., 748 Third Ave., soon lets contract, 180x245 ft., concrete, steel, brick sports center, $200,000. J. C. Fortin, 240 Fourth Ave., archt. CD 4/1.

LOW BIDDERS

Md., College Park—STADIUM STANDS—University of Maryland, Fidelity Bldg., Baltimore, Sept. 8, rein.-con. stadium stands, from Baltimore Contractors, Inc., 711 E. Central Ave., Baltimore, **$299,990.** CD 8/23.

Mass., Boston — CONDUIT—Commonwealth of Massachusetts, Metropolitan Distr. Comn., 20 Somerset St., Sept. 8, marginal conduit between Mt. Vernon and Dartmouth Sts., from West Constr. Co. & Julian Constr. Co., 119 Landseer St., West Roxbury, **$749,090.** CD 8/24.

†**N. C., Camp Lejeune (Br. New Bern)**—FACILITIES—Pub. Wks. Office, Camp Lejeune, Sept. 6, misc. repairs and replacements, Defense Housing, Spec. 22962, from Skinner & Ruddock, 12 State St., Charleston, S. C., **$135,107.** CD 8/17.

Oregon—RURAL DISTRIBUTION LINES—Blachly-Lane County Co-operative Electric Assn., Blachly, rejected bids Sept. 1, 30 mi. rural distr. lines, Lane Co. Will re-advertise. CD 8/31.

†**Oregon**—TRANSMISSION LINE—Bonneville Power Admin., 729 N. E. Oregon St., Portland, Zone 8, rejected bids Aug. 23, clearing 44.6 mi. right-of-way for Warm Springs sect. of Maupin-Detroit 230 kv. transmission line, Wasco Co. Inv. 4761, L. B. **$129,000.** CD 8/31, under LB.

Va., Gloucester Point — MARINE LABORATORY—Virginia Fisheries Comn., 7 N 2 St., Richmond, Va., marine laboratory, from Sawyer Constr. Co., Hampton, **$100,200.**

CONTRACTS AWARDED

Ga., Atlanta—SIGNAL CONTROL BLDG.—Seaboard Airline Ry. Co., W. D. Simpson, ch. engr., S.A.L.R.R. Bldg., Norfolk 10, Va., signal control bldg., to Ralph W. Dudenhausen, Candler Bldg. Approx. **$50,000.** Bids 9/6. CD 9/2.

La., New Orleans — MOTOR COURT — Bel Air Motel, c/o Henry A. Ehrensing, archt., 1032 Elenore St., motor court. Owner builds. Approx. **$50,000.**

Maryland—RURAL DISTRIBUTION LINES —Southern Maryland Electric Co-operative, Inc., Hughesville, 26 mi. 66 kv. rural distr. line, St. Mary's Co., to Trans Electric Co., 106 East Broadway, Louisville 2, Ky., **$135,775.** R. O. Vannort Engineers, Inc., 218 W. Second St., Charlotte, N. C., engr. CD 11/26/48.

Montana—RURAL DISTRIBUTION LINES —Elmo Electric Co-operative, Assoc., Inc., Polson, 47.69 mi. rural distr. lines, Elmo Co., to Cahill-Mooney Constr. Co., 220 E. Front St., Butte, **$73,441.** Verne E. Ashley, Moose Bldg., Missoula, engr. CD 5/20.

Montana—RURAL DISTRIBUTION LINES —Yellowstone Valley Electric Co-operative, Inc., Huntley, 77.36 mi. rural distr. line and sys. imprvs., Yellowstone Co., to Line Builders, Inc., Box 581, Billings, labor **$41,780,** materials **$77,000,** total $118,780. CD 5/20.

Nebraska—RURAL DISTRIBUTION LINES —Twin Valleys Electric Membership Assoc., Cambridge, 482.2 mi. rural distr. lines, Furnas Co., to Kincade & Lofton, Brookhaven, Miss., **$498,373;** 381.73 mi. rural distr. lines, Furnas Co., to Hagen Powell, 115 16 St. N., Nashville, Tenn., **$373,976.** CD 4/5.

New Mexico — RURAL DISTRIBUTION LINES—Sierra Electric Co-operative, Inc., 113 Foch St., Hot Springs, 120 mi. rural distr. lines, Sierra Co., to Walsh Constr. Corp., Sherman, labor **$46,148,** materials **$120,000,** total $166,148. Tynes & Loftin, 512 Heard Bldg., Phoenix, Ariz., engrs. CD 4/21.

New Mexico — RURAL DISTRIBUTION LINES — Southwestern Electric Co-operative, Inc., Clayton, 230 mi. rural distr. lines, Union Co., to Thompson, Haight & Keister, 2906 N. Portland Ave., Oklahoma City, Okla., labor **$45,023,** materials **$230,000,** total $275,023. CD 9/2/48.

†**N. C., Fort Bragg**—SWIMMING POOL, etc.—U. S. Eng., 308 Customhouse, Wilmington, swimming pool and field house. Eng.-31-075-50-1, to T. A. Loving & Co., Bank of Wayne Bldg., Goldsboro, **$614,400.** Bids 8/31. CD 9/7, under LB.

North Dakota — RURAL DISTRIBUTION LINES—Mor-Gran-Sou Electric Co-operative, Inc., Flasher, 380.55 mi. rural distr. lines, Morton Co., to Rue Contr. Co., 1338 3 Ave. N., Fargo, **$375,892.** CD 6/14.

Oklahoma—RURAL DISTRIBUTION LINES —Cotton Electric Co-operative, Walters, 229.13 mi. rural distr. lines, Cotton Co., to W. J. Thomas & Co., Inc., P. O. Box 7006, Dallas 9, Tex., **$247,074.** CD 12/27.

Oklahoma—RURAL DISTRIBUTION LINES —Harmon Electric Assoc., Hollis, 77 mi. rural distr. line and sys. imprvs., Harmon Co., to General Electric Contr. Co., 1712 S. St. Louis St., Tulsa, **$133,408.** E. R. Taylor & Assoc., 4107A E. 11 St., Tulsa, Zone 4, engrs. CD 12/27.

Oklahoma — ELECTRIC LINE — Oklahoma Gas & Electric Co., 321 N. Harvey St., Oklahoma City, 54 mi. 100,000 volt line from Cleo to Woodward, Woodward Co., own forces. **$370,000.** Frank Partridge, c/o owner, engr.

Oklahoma—RURAL DISTRIBUTION LINES —Tri-County Electric Cooperative, Inc., Hooker, 540.52 mi. rural distr. lines, Texas Co., to Kennett & Pavlicek, Box 1305, San Angelo, Tex., **$629,013.** Carl C. Cox, 315 Barfield Bldg., Amarillo, Tex., engr. CD 6/24.

●†**Oregon**—GENERATORS—U. S. Eng., Pittock Block, Portland, Zone 5, furnishing, installing, testing two 555,555 kva. a.c. generators and appurtenances for Detroit Dam on North Santiam River, CIVENG-35-026-50-7, Marion Co., to Westinghouse Electric Corp., Union Bank Bldg., Pittsburgh, Pa., **$2,094,979.** Bids 8/26, awarded 9/8. CD 8/30, under LB.

Pa., Phila.—RECREATION CENTER—Dpt. Pubs. Welfare, City Hall Annex, recreation center playground, Adams Ave., Largo and Arrott Sts., to M. & L. Constr. Co., 108 S. 40 St., **$50,881.** Jack S. Steele Co., 1416 Chestnut St., engr. CD 11/24/44.

Tennessee—RURAL DISTRIBUTION LINES —Southwest Tennessee Electric Membership Corp., Bronxville, 259.49 mi. rural distr. lines, Madison Co., to Irby Constr. Co., 816 S. State St., Jackson, Miss., **$325,508.** Pat M. Sullivan, 905 Stahlman Bldg., Nashville, engr. CD 10/21/48.

●**Texas**—GAS MAIN—Lone Star Gas Co., 1915 Wood St., Dallas, 145 mi. 16 in. welded joint natural gas main between Hamilton and Kerrville, force account. **$2,350,000.** CD 6/17/48.

Tex., Dallas—RADIO TOWER—Texas Baptist Inc., Baptist Bldg., 600 ft. steel radio tower, Station KYBS, to Andrews Tower Co., Fort Worth Natl. Bank Bldg., Fort Worth. Approx. **$55,000.**

Wyoming—RURAL DISTRIBUTION LINES —Bridger Valley Electric Assoc., Inc., Mountain View, 62.57 mi. rural distr. lines, Uinta Co., to Cannon & Adams, St. George, Utah, labor **$26,786;** materials **$62,000,** total $88,787. Bids 4/29. CD 4/21.

Alberta, Saskatchewan and Wisconsin—OIL PIPELINE—Imperial Oil Ltd., 56 Church St., Toronto, Ont., fabricating 800 mi. 16- to 20-in. oil pipeline, to A. O. Smith Corp., 3533 N. 27 St., Milwaukee, Wis., U. S. A. CD 6/27.

Ont., Fort William—ARENA and CURLING RINK—City, D. M. Martin, clk., 175x230 ft., rein.-con., masonry, steel arena and curling rink, to Clayton Co. Ltd., 16 Victoria Block. Approx. **$658,900.** Bids 8/26. C. C. Parker, 63 John St., Hamilton, engr. CD 8/9.

Ont., London — GAS WELL DRILLING — Union Gas Co., Ltd., Chatham, natural gas well drilling, near here, Owner builds. **$375,000.**

Proposal Advertisements see pp. 67 to 69

OFFICIAL PROPOSALS

Bids: October 25, 1949 (364)

Sewerage System & Subaqueous Outfall Sewer

VILLAGE OF CROTON-ON-HUDSON NEW YORK

NOTICE TO CONTRACTORS

Sealed Proposals for the Construction of a Sewage Works will be received by the Mayor and Board of Trustees at their office in the Municipal Building, Van Wyck Street, Croton-on-Hudson, New York, until 8:00 P. M. Eastern Standard Time, on October 25, 1949, after which time they will be publicly opened and read. No bids will be accepted after said hour. Proposals will be received on the following contracts:

Contract I—Sewerage System

Contract III—Subaqueous Outfall Sewer

Information for Bidders, Form of Proposal, Form of Contract, Plans and Specifications, may be examined at the offices of Bowe, Albertson & Associates, Engineers, 110 William Street, New York City, New York and at the office of the Village Clerk, Municipal Building, Croton-on-Hudson, New York, between the hours of 10 A. M. and 4 P. M. daily except Saturdays, Sundays and holidays.

Copies of the plans and specifications may be obtained from either the offices of the Engineers or the Village Clerk upon making a deposit of fifteen ($15.00) dollars, which amount will be refunded to the bidder who applies for a refund within thirty (30) days after the date when the bids are opened, and who returns the plans and specifications undamaged.

Cash, or a certified check made payable to the order of the Village of Croton-on-Hudson, New York, in the amount of 5% of each contract bid must be deposited by each bidder with his bid as a guarantee that, in case the contract is awarded to him, he will, within ten days thereafter, execute such contract and furnish a satisfactory Performance Bond and Labor and Material Bond. Acceptance of the bid will be contingent upon fulfillment of this requirement by the bidder and on failure to do so, he shall forfeit the deposit.

The successful bidder on each contract will be required to furnish a Performance Bond and Labor and Material Bond in statutory form and with sureties authorized to do business in the State of New York, which bonds shall be in the amount of the contract.

The Village of Croton-on-Hudson reserves the right to reject any or all bids, to waive any informalities to accept the bid or bids which in its judgment will be for the best interests of the Village of Cronton-on-Hudson.

VILLAGE OF CROTON-ON-HUDSON,
NEW YORK
By: Albert Rozell,
Mayor

Dated, September 13, 1949

(Continued on page 68)

OFFICIAL PROPOSAL

RATE: The rate for Official Proposal Advertising is $1.00 per line (or fraction) per insertion.

COPY RECEIVED: up to 3:00 P.M. Friday for issue out following Thursday subject to space open for last minute ads.

SEND COPY: to Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

OFFICIAL PROPOSALS

U. S. Government
(Continued from page 67)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (Specifications No. 2781) will be received by Bureau of Reclamation, Elverta, California, October 7, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of 230-kilovolt transmission lines, Perkins to Tracy and Oroville to Elverta, Central Valley Project, California. The work is situated near Marysville, Sacramento, and Stockton, California. Principal items are approximately: 54 miles of constructing foundations and erecting steel towers and of stringing conductors from Perkins to Tracy; 56.4 miles of stringing conductors from Oroville to Elverta; and other work. Time allowed for completion will be 400 to 500 days. For circulars, address Bureau of Reclamation, Elverta, California; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(359)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2787) will be received by Bureau of Reclamation, Coulee Dam, Washington, October 11, 1949, and then publicly opened for furnishing labor and materials and performing all work for earthwork sta. 7+20 to sta. 466+49.57, Potholes East Canal, Columbia Basin Project, Washington. The work is situated about 8 mi. north of Athello, Washington. Principal items are approximately: 931,000 cu. yds. of canal excavation; 144,030 cu. yds. of excavation from borrow for constructing dikes and canal embankments; compacting 135,000 cu. yds. of embankments; 7,200 cu. yds. of riprap; and other work. Time allowed for completion will be 380 days. For particulars, address Bureau of Reclamation, Ephrata, Washington; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(363)

OFFICIAL PROPOSALS

Bids: October 6, 1949 (365)

Construction of Route 4 Parkway

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 4 PARKWAY, SECTIONS 1C & 2D, PAVING

Construction of Route 4 Parkway, Sections 1C and 2D, Paving from Route 35 at New Brunswick Avenue to Port Reading Railroad, Woodbridge Township, Middlesex County. Federal Project No. F-188(17). Length 2.722 miles.

Estimated:

36,000 cu. yds. Roadway Excavation-Earth
21,000 sq. yds. Stabilized Turf Shoulders
45,000 sq. yds. 2" Macadam Base Course
15,000 sq. yds. 3" & 4" Mod. Pen. Macadam Inter. Course
34,000 sq. yds. 4" Pen. Macadam Surface
870 tons Bituminous Concrete Pavement
83,000 sq. yds. 8" Plain Conc. Pavement Surface

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N. J., on Thursday, October 6, 1949, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by Sections 2, 3 and 4, P. L. 521, 78th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, Cor. Maple and Fayette Streets, Perth Amboy, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all unskilled labor employed on this contract shall be 65¢ per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be 75¢ per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.25 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

Bids: October 6, 1949 (366)

Construction of Route 25, Section 3E

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 25, SECTION 3E

Construction of Route 25, Section 3E, Paving West Bound Roadway, from Bordentown to Yardville, Bordentown Township, Burlington County. Federal Aid Project No. F-94(5). Length 1.928 miles.

Estimated:

15,700 cu. yds. Roadway Excavation-Earth
5,300 sq. yds. 4" Macadam Base Course
5,300 sq. yds. 3" Mod. Pen. Macadam inter. Course
5,300 sq. yds. 3" Pen. Macadam Surface
5,300 sq. yds. 6" Gravel Base Course
5,000 sq. yds. 9" Rein. Conc. Pavement Surface
21,300 sq. yds. 10" Rein. Conc. Pavement Surface
25,000 gals. Bituminous Sub-sealing

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N. J., on Thursday, October 6, 1949 at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by Section 1, Public Laws 834, 80th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 460 High Street, Burlington, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all unskilled labor employed on this contract shall be 65¢ per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be 75¢ per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.25 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex (Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

Bids: October 11, 1949 (361)

Gasoline-Engine Generator Sets

CONTRACT 409

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, October 11, 1949, for Contract 409, for furnishing, testing and delivering three gasoline-engine generator sets for the Rondout effluent chamber and the Neversink and East Delaware intake chambers of the Delaware aqueduct, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of one thousand dollars ($1,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, HENRY HESTERBERG, RUFUS E. McGAHEN, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

(Continued on page 69)

OFFICIAL PROPOSALS
(Continued from page 68)

Bids: October 5, 1949 (362)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Chapter 63, Laws of 1936, as amended, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on Wednesday, October 5, 1949 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 4				
		A. R. Mulligan, Dist. Engr., Barge Canal Term., Rochester, N. Y.				
Monroe	LOSP 49-2	Lake Ontario State Parkway, Sec. B	5.50	Rob.Grav.F.C. = 5.46 mi. Misc. Work = 0.04 mi. Conc. Closed Box 2 at 26' 3" 21° Open Conc. Box	$65,000 Plans $20	$1,158,000
Wyoming	RC49-114	Pike-Gainesville, S. H. 8121	0.05	8" Cem. Conc. Pavt. 20' & 28' Wide 60' Alpha I-Beam Alpha—$151.20	$4,500 Plans $5	$77,000
		DISTRICT No. 5				
		C. R. Waters, Dist. Engr., 65 Court St., Buffalo, N. Y.				
Cattaraugus	FARC 49-112	Cattaraugus – Dayton, Pt. 1, S. H. 1568 Proj. F646(5)	0.48	Asp. Conc. Opt. = 0.46 mi. Misc. Work = 0.02 mi.	$7,000 Plans $5	$119,000
Erie	PSC 5472	Elim. of Grade Crossing of the N. Y. C. R. R. with Erie St., West Seneca St., Church St. and the Terrace in the City of Buffalo	2.54	Asp. Conc. Opt. = 0.08 mi. 8" Cem. Conc. Pavt. Var. Wdt. = 0.86 mi. R. R. Track Changes = 1.60 mi.	$250,000 Plans $20	$4,520,000
Erie	PSC 5472	Elim. of Grade Crossing of the N. Y. C. R. R. with Erie St., West Seneca St., Church St. and the Terrace in the City of Buffalo	....	Building and Misc Work	$7,000 Plans $10	$125,000
		DISTRICT No. 8				
		J. S. Bixby, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.				
Orange	FARC 49-113	Woodbury-Central Valley, S. H. 157 Proj. F532(11)	0.86	9" Cem. Conc. Pavt. 24' Wide	$12,000 Plans $5	$203,000
Ulster	PSC 4781	Elim. of Grade Crossing of the N. Y. C. R. R. with Broadway in the City of Kingston	0.19	8" Cem. Conc. Pavt. 54' Wide 94½' Plate Girder 86½' Plate Girder	$54,000 Plans $10	$991,000
		DISTRICT No. 10				
		J. J. Darcy, Dist. Engr., Montauk Hwy. at Little E. Neck Rd., Babylon, L. I., N. Y.				
Kings	BQE 49-2 (Cont. 14)	Brooklyn-Queens Expressway	0.31	Demolition of Buildings	$9,000 Plans $5	$160,000

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

E. P. TALLAMY,
Supt. of Public Works

OFFICIAL PROPOSALS

Bids: October 20, 1949 (360)

Sewage System & Sewage Treatment Plant

NOTICE TO BIDDERS
SWAN LAKE SEWER DISTRICT IN
THE TOWN OF LIBERTY, SULLIVAN
COUNTY, NEW YORK

NOTICE IS HEREBY GIVEN that the Town Board of the Town of Liberty will meet at the office of the Town Clerk in the Sherwood Building in the Village of Liberty, New York, at eight o'clock p.m. on the 20th day of October, 1949, for the purpose of receiving sealed proposals for furnishing materials and equipment and performing labor for the construction of a sewage system and sewage treatment plant and appurtenances, for the Swan Lake Sewer District in the Town of Liberty, at which time and place all proposals will then be publicly opened and read aloud.

The work will be divided into two sections or contracts, and separate proposals will be received for the two parts of the project, as follows:

CONTRACT NO. 1
SEWAGE SYSTEM, including 8,500 lineal feet of 8" to 12" Sewers, 32 Manholes, and other appurtenances.

CONTRACT NO. 2
SEWAGE TREATMENT PLANT including Control Building with Pump Station and Chlorinator, Primary and Secondary Settling Tanks, Primary and Secondary Trickling Filters, Sludge Digester, Sludge Drying Beds, Manholes, Piping, Specified Equipment, and appurtenances.

Form of bids, Plans, Specifications and Estimates of the Expense, Proposed Contract Forms, and Forms of Proposals and Performance Bond may be examined and copies thereof obtained at the offices of Nial Sherwood, C. E., Sherwood Building, Liberty, New York.

A payment of twelve dollars for each set of plans and specifications for Contract No. 1 shall be made on delivery of such sets. No refund will be made.

A payment of thirty dollars shall be made on delivery of each set of plans and specifications for Contract No. 2. Such payment will be returned to all actual bidders, who return plans and specifications within ten days of the opening of the bids. No refund will be made to non-bidders.

Each proposal must be accompanied by a certified check, payable to the order of Francis A. Hanofee, Supervisor, in the amount of five (5) per cent of the total amount of the bid, or a bond with sufficient sureties in the penal sum equal to the above stated amount, conditioned that if the proposal is accepted, the bidder will enter into a contract for the execution of the work, and that he will execute such further security as may be required for the faithful performance of the contract. All deposits except those of the successful bidders will be returned.

The Town Board reserves the right to reject any or all bids. Dated at Liberty, New York.

September 12, 1949.

TOWN BOARD OF THE TOWN OF
LIBERTY,
Francis Hanofee,
Supervisor.

WHITAKER WELIS,
Town Clerk.

OFFICIAL PROPOSALS

Bids: September 28, 1949 (354)

Earth & Embankment Work, Bridges, Service Road, etc.

STATE OF RHODE ISLAND AND
PROVIDENCE PLANTATIONS
DEPARTMENT OF FINANCE
DIVISION OF PURCHASES
NOTICE TO ROAD AND BRIDGE CONTRACTORS

Sealed Proposals addressed to the Division of Purchases, for the construction of the following project will be received by the Division of Purchases at the office of the State Purchasing Agent, Room 123 State House, Smith Street, Providence, R. I., until 10:00 A.M. (EST) on the 28th day of September 1949, at which time they will be opened and read in public.

R. I. Contract No. 4917, R. I. Federal Aid Project No. U-UG-143(1), County of Providence, Olneyville Square, Providence, Rhode Island. Expressway from Hartford Avenue to end of limits of CONTRACT ONE, consisting of Earth and Embankment Work, Bridges, Service Road No. 4, Atwood Street Extension, Walls and Other Incidentals.

Bids for the above work must be made on blanks furnished by the Department of Public Works, Division of Roads and Bridges. Plans and specifications and Special Provisions may be examined at Room 123 State House or Room 224 State Office Building, Providence, R. I., on and after Wednesday, September 7, 1949, every week day except Saturdays and holidays, between the hours of 8:30 A.M. and 4:30 P.M. Blanks for submitting proposals may be obtained thru the office of the State Purchasing Agent at the address above stated. A deposit of $50.00 shall be made for each set of contract documents, which will be refunded if plans and specifications are returned in good condition prior to October 19, 1949.

A certified check or bid bond payable to the State of Rhode Island, or cash, in the amount of $30,000, must be furnished by each bidder.

This Proposal Guaranty will be returned after the contract has been executed. A performance bond of one hundred (100) per cent of the contract price with a satisfactory surety company will be required of the successful bidder. The Division of Purchases reserves the right to reject any or all bids.

FEDERAL REQUIRED CONTRACT PROVISIONS: The attention of prospective bidders is called to the fact that this project is to be bid upon and the contract executed under the rules and regulations for Carrying Out the Provisions of the Federal Aid Highway Act of 1944 and the Special Provisions, dated July 2, 1948, as amended and supplemented, as required by the Department of Commerce, Bureau of Public Roads.

EMPLOYMENT LISTS: A local employment service has been designated by the R. I. Employment Service to prepare the employment lists for the project. Requests for men to be employed on this project shall be submitted to the District Office at 112 Union St., Providence, R. I.

WAGES OF LABOR: In conformity with the provisions of Chapters 290 and 291, General Laws, 1938, the minimum wages for a day's work paid craftsmen, teamsters and laborers shall not be less than the customary and prevailing rate of wages for a day's work in the same trade or occupation in the locality where the work is undertaken. Such a schedule of wages has been established on a minimum hourly basis and is on file in the office of the State Department of Labor. The contractor shall pay not less than these minimum wage rates.

The attention of bidders is invited to the fact that the R. I. Department of Public Works, Division of Roads & Bridges, has been advised by the wage and Hour Division, U. S. Department of Labor, that contractors engaged in highway construction work are required to meet the provisions of the Fair Labor Standards Act of 1938 (52 Stat. 1060).

SUBLETTING OR ASSIGNING THE CONTRACT: The attention of bidders is directed to the Standards and/or Special Provisions covering subletting or assigning the contract.

DEPARTMENT OF FINANCE, DIVISION
OF PURCHASES
By Franklyn A. Adams,
State Purchasing Agent

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

STRUCTURAL STEEL FABRICATOR
desires
SALES ENGINEER
Thoroughly experienced. Capable structural Engineer. Executive potentialities. All replies strictly confidential.
PITTSBURGH BRIDGE & IRON WORKS
Pittsburgh 22, Pa.

STRUCTURAL DESIGNERS
DETAILERS
on bridge and highway projects
Consulting Engineers Office
Location—Middle West
Give full experience, reference and salary expected.
P-9954, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

REPLIES: Box No.: Address to office nearest you
NEW YORK: 330 W. 42nd St., (18)
CHICAGO: 520 N. Michigan Ave., (11)
SAN FRANCISCO: 68 Post St., (4)

POSITIONS VACANT

WANTED—ENGINEERS, Architects, Draftsmen experienced in the design of sewers, sewage treatment plants, water treatment plants and industrial buildings. Also engineers to supervise construction. State qualifications, experience. Salary requirements and date available. P-1155, Engineering News-Record.

WANTED: AN experienced Engineer for a City of 22,000 population, salary $4,000.00. Address: Carl E. Pratt, Sr., Mayor, Hastings, Nebraska.

ESTIMATOR—REINFORCING Bar Fabricator operating in the southeast requires services of man capable of making accurate Bar Estimates and also capable of managing Estimating Department. Have openings for Reinforcing Bar Detailers. Write, giving age, availability, experience, capabilities and salary expected. P-9858, Engineering News-Record.

WANTED: CONCRETE Paving Research Engineer, age 30 to 45, at least 8 years experience in concrete highway paving construction, design, and testing. Excellent opportunity for engineer interested in research and development. Salary open, depending upon qualifications. Location near Chicago. P-9911, Engineering News-Record.

OPPORTUNITY FOR Field Engineer with experience. Sewage treatment plant equipment installation and operation. Permanent position with Est. Mfgr. requires considerable travel. Please give full details including salary required. Headquarters Chicago. P-9948, Engineering News-Record.

CONTRACTOR'S ESTIMATOR wanted by established construction company. Excellent opportunity available for man with good estimating background on concrete bridges, dams and foundation work. Must know and follow costs and be able to handle complete bidding. State qualifications, experience, background, etc. P-9960, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

SALESMEN WANTED—Graduate mechanical civil or mining engineer, or the equivalent in experience, desired for sales work by manufacturer of excavating equipment. Several openings for right men. Do not apply unless you have sold or can prove your aptitude for selling heavy construction machinery. Apply by mail only. Give full particulars and enclose recent photograph. Address Vice President in Charge of Sales, Bucyrus-Erie Company, South Milwaukee, Wisconsin.

POSITIONS WANTED

GENERAL CONSTRUCTION Superintendent or Project Manager, Graduate Civil and Mechanical Engineer, 15 years experience as General Supt., on varied projects including refineries, power and industrial plants, utilities, housing, earthwork and docks. Past six years on foreign work, speaks and reads several languages. A-1 references, Native American, good health. Foreign assignment preferred. Available immediately. PW-9945, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT with excellent background in heavy construction, with following. Geo. W. Urban, Alexander Road, Bedford, Ohio. Phone 1921-J-5.

SALES REPRESENTATIVES
WANTED

This is a long established leading construction company with a world-wide reputation.

Our work embraces all types of heavy construction and includes paper mills, chemical plants, oil cracking plants, distribution warehouses, dams, sewer and water supply systems, bridges, breakwaters, piers, housing, and so on.

We are adding to our sales organization.

The representatives we seek must be first, salesmen who have the ability to follow leads to a successful conclusion.

If you meet this qualification and have any one or more of the following qualifications you should apply.

(a) Have contacts with large industrial construction users
(b) Have contacts and experience in dealing with officials on city, state or federal level
(c) Have ability to contact important consulting engineer firms as a means of developing business
(d) Have ability to develop sufficient business in an area of your own selection to warrant our opening a sales office for you to manage
(e) Control foreign business
(f) Experienced in arranging the financing of projects both for private builders and/or for municipal and state governments and/or for others

Compensation is liberal.

Herewith is presented an opportunity for several high class specialists to become identified with a highly successful dignified organization. This company is able to render complete and well rounded service and assistance in all sales efforts.

Write in the strictest confidence giving full information. Your letter will be acknowledged immediately.

Interviews will be arranged at mutually convenient points anywhere in the United States.

RW-9966, ENGINEERING NEWS-RECORD
330 W. 42 STREET, NEW YORK 18, N, Y.

POSITIONS WANTED

PROJECT MANAGER: General or Job Superintendent: 30 years experience; heavy and light construction; housing; apartments; schools, hospitals; office buildings; chemical; industrial plants; powerhouses; handle all trades including mechanical and allied work. PW-8779, Engineering News-Record.

CONTRACTOR'S FIELD Engineer, 25 yrs. experience in laying-out everything from property line to fin. grading on all sorts of jobs. Expert on cross-sections both field and office. Some knowledge of drafting computing and taking off quantities. PW-9626, Engineering News-Record.

CONTRACTOR'S RIGHT Hand Man—Experienced Manager, Engineer-Estimator, Purchasing Agent on Commercial, Multi-Residential, Industrial Bldg. Construction, Including all Utilities; and on Engineered Construction covering Airports, Marine Facilities; Railroads, Rods, Quarry Operations. Desires permanent position as Manager, Estimator, Purchasing Agent for Gen. Contractor. Good background for position of Area Sales Manager for Cement Co., Bldg. Supply Co., Equipment Dealer. In reply state exact salary connected with position open. References. PW-9913, Engineering News-Record.

WELDING FOREMAN—Age 36, married. 15 yrs. experience field welding of pipe lines, bridges, buildings, tanks and ships. 3 yrs. maintenance welding heavy construction equipment. Available Nov. 1st. South or West. PW-9898, Engineering News-Record.

GENERAL SUPERINTENDENT and Engineer, 27 years experience in complete charge of projects consisting of: Dirt moving, sewers, highways, bridges, mass concrete, caissons, tunnels and foundations. Available October 1, 1949, will go anywhere. PW-9812, Engineering News-Record.

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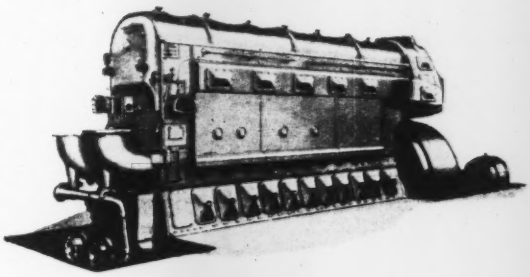

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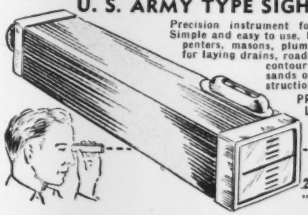

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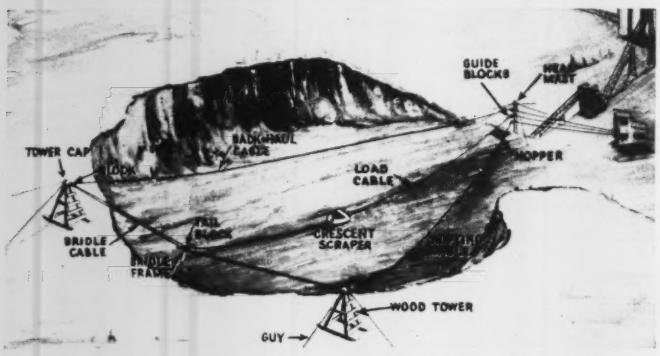
NEW PRODUCTS



Rapid-Shifting Drag Scraper Speeds Cut-and-Fill Work

When a power drag scraper is used for cut-and-fill work, it is desirable to provide a means for rapid shifting of the tail end of the machine. This is now possible with a new series of drag scrapers in sizes from ½ to 4 cubic yards. The Sauerman rapid-shifting scraper machines provide complete automatic control for shifting the tail end of the machine. Heart of the unit is the Sauerman 3-drum hoist and elevated tail bridle assembly. A cable is stretched between two tail towers with the bridle for the tail block riding on this cable. The third drum of the hoist moves the bridle frame in one direction, the pull of the outhaul cable pulls it in the opposite direction, and the drum brake holds it in position as desired. Each machine is furnished with a gasoline, diesel, or electric-driven 3-drum roller-bearing hoist. Normal specifications call for cable spans ranging from 200 feet for the small units to 400 feet for the largest units. These spans can be extended if required. Timber tail towers are furnished by the purchaser, but Sauerman will supply tower caps and drawings to help in their construction.—Sauerman Bros., Inc., 532 S. Clinton St., Chicago 7, Ill.

Plastic Highway Signs

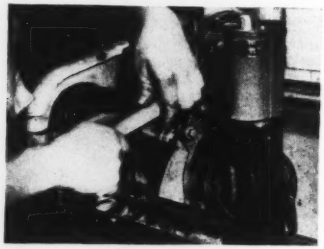
Plastic highway signs are non-corrosive, resilient, and practically indestructible. The specialized paints and painting process employed cause the legends on the signs to become a part of the plastic itself, resulting in greater permanency and lowered maintenance costs. These signs are available in standard sizes, colors, shapes, lettering styles, legends, and mountings.—Columbia Sign & Signal Co., 10030 Lorain Ave., Cleveland, Ohio.

Compressor Delivers 105 Cfm

Feature of the new Schramm compressor is the fact that the engine and the compressor unit complement each other, so that 90 percent of the engine and compressor parts are interchangeable. The Unistage compressor will deliver 105 cubic feet of air per minute. It is equipped with a Pneumastat which assures infinitely variable speeds and which eliminates continuous loading and unloading.—Schramm, Inc., West Chester, Pa.

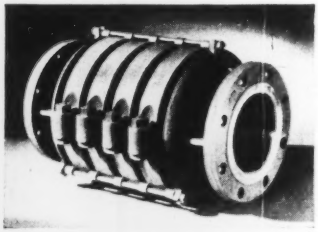
Sash Eliminates Grouting

New method of installing metal sash eliminates all grouting and caulking, and reduces sash installation time to less than five minutes. It employs a rolled metal section which is imbedded in the concrete wall or inserted in the masonry joint and permits the builder to put up walls without having sash on hand. It does not require expansion bolts, clips, angles, wedges, or bracing wires. The Fry sash reglet applies a vise-like grip to the metal sash and makes the installation completely weatherproof. For concrete construction, the reglet is mounted on the wood buck, the concrete poured, the buck removed, and the reglet left imbedded in the wall. On masonry construction, the reglet is used in the jambs only.—Fry Reglet Co., Division of Watt Electric & Mfg. Co., Birmingham, Mich.



Abrasive in Stick Form

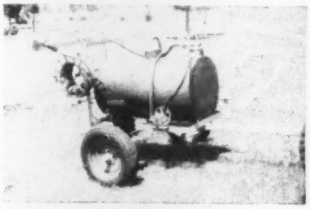
Abrasive for cleaning and polishing metals is available in stick form for ease of handling. When held against a turning commutator it removes high-resistance film, dirt, and grease, and because it is non-dusting, it does not affect the face of the brush or cause filling of commutator slots. The flexible abrasive is made in five sizes from ⅜x½x5 to 1x4x5 inches.—Ideal Industries, Inc., Sycamore, Ill.



Packless Expansion Joint

The Corruflex packless expansion joint is designed to absorb expansion and contraction due to temperature changes in steam, liquid, and gas-pipe lines. Compact design permit its use in trenches, tunnels, or other cramped quarters. The Corruflex joint is available in sizes from 3 to 24 inches, single or multiple corrugation, with or without self-equalizing rings, single or double units, and with flanged or welded ends. Joint is made of copper, stainless steel, or special alloys, and with internal sleeves if required. The traverse of the joint ranges from fractions of an inch to fifteen inches. The

joint will operate under pressures from 0 to 300 pounds and temperatures from sub-zero or 1,600 degrees F.—American District Steam Co., North Tonawanda, N. Y.

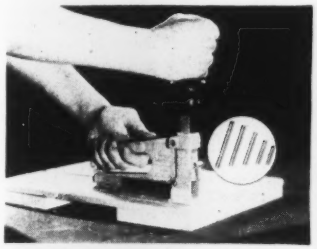


Boomless Weed Sprayer

Weed sprayer features special spray gun which eliminates the need for booms or other attachments which have to be raised or lowered to pass guard rails, sign posts, or other obstructions. The Kromer gun can spray a distance of 30 feet in a straight line, giving an even distribution of chemical over the entire distance. The gun can be removed from its mounting for spraying inaccessible locations. The Kromer equipment includes a hand boom which covers a 4-foot swath and can be used along fences and for small spot spraying.—O. W. Kromer Co., 1120 Emerson Ave., N. W., Minneapolis 11, Minn.

Air Entraining Agent

New air-entraining agent is named Aircrete. It complies fully with government regulations for this type of material and is added to concrete mixes at the mixing plant or job site. Recommended usage is one ounce of Aircrete per sack of cement. The material is an aqueous solution of neutralized vinsol resin designed to reduce surface tension of the gaging water and to cause formation of microscopic globules of air in the concrete mix.—L. Sonneborn Sons, Inc., 80 Eighth Ave., New York 11, N. Y.



Hand-Operated Portable Nailer

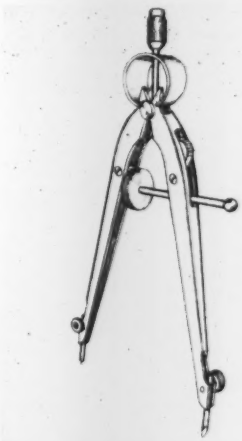
Hand-operated portable nailer, with automatic feed, drives and countersinks Heller lock-nails with one blow. These nails have high holding power and do not split the wood into which they are driven. The machine will handle up to a 100 lock-nails at a time. They are made of copper, bronze, galvanized, or electro-plated metals.—The Heller Co., 2153 Superior Ave., Cleveland 14, Ohio.

Pump Unit for Dump Trailer

Hydraulic pumps units are now available for operation of Forged-Trak dump trailers with all makes of track-type tractors. The Athey hydraulic pump unit provides smooth, positive control of dumping operations, allowing the trailers to be side-dumped while stationary or while tractor and trailer are in motion. Controls for the hydraulic system are located near the tractor operator.—Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill.

Heavy-Duty Detergent Oils

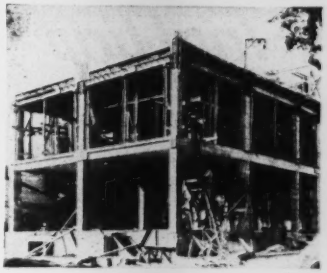
Super Tenol and Tenol Extra are recommended for applications requiring heavy-duty service and where improper or high sulphur fuels are used. Features superior performance and engine cleanliness, full power under high-temperature operations and extra-heavy-duty service, and retards the development of cold-engine sludge under conditions of long idling and stop-and-go operation.—Sinclair Refining Co., 630 Fifth Ave., New York, N. Y.



Bow Compass for 12-Inch Circle

Bow compass features a spring-loaded trigger lock for quick setting of legs for any diameter circle within its range of 12 inches. A rapid setting is made by means of a rod which slides freely through the open legs when the trigger is depressed. Vernier adjustments are made by means of a thumb wheel. The compass is 7⅞ inches long, weighs 2¼ ounces.—The Omicron Co., Box 907, Glendale 4, Calif.

Another Job Showing the ADAPTABILITY of ECONOMY STEEL FORMS



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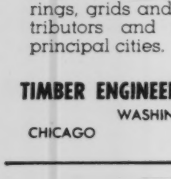

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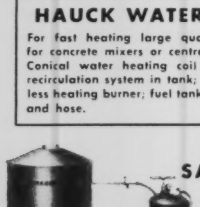

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150-160 Tenth St., Brooklyn 15, N. Y.

MANUFACTURERS' PUBLICATIONS

Explosives Handbook—Pocket-size handbook contains 40 pages of information about explosives. This guide presents detailed information on the characteristics of various types of explosives, together with a useful table of "Explosives Recommended Under Average Conditions." In addition, a reference guide is provided for assistance in determining quantities of explosives required in specific applications—ILLINOIS POWDER MFG. CO., DEPT. JM, 730 PIERCE BLDG., ST. LOUIS 2, MO.

Vitrified Tile Conduit—Data sheet describes the uses of vitrified tile conduit for steam, oil, and hot water piping. Feature of bulletin is table of typical pipe-carrying capacities of Still-water steam conduit sectional covering. Bulletin illustrates standard and extra strength clay pipe, clay pipe fittings, fuel linings, perforated pipe, well pipe, refractory hot tops, wall coping, and liner plates.—THE STILL-WATER CLAY PRODUCTS CO., 3334 PROSPECT AVE., CLEVELAND 15, OHIO.

Welding Regulators—Pressure regulators for welding, cutting, special flame processes, maintaining gaseous pressures in electrical equipment, and other operations where controlled gas pressure is required are described in a 32-p. catalog. More than one-hundred regulators are listed in this catalog, with 26 of them illustrated. One section is devoted to a description of regulator adapters and pressure gages, and another, to a description of flow and pressure charts.—AIR REDUCTION SALES CO., 60 E. 42ND ST., NEW YORK 17, N. Y.

Motor Graders—Use of motor graders in shaving blacktop from a bridge deck without injuring the wooden flooring is a feature of Caterpillar Bulletin No. 12255. This 16-p. catalog shows motor graders in use for casting ditched materials to center of roads, mixing and spreading asphalt surfacing material, back sloping, snow plowing, and ditching.—CATERPILLAR TRACTOR CO., PEORIA 8, ILL.

Electric-Motor Design—Multi-color bulletin features the Uniclosed motor. Dramatic color-photo reproductions and progressive drawings are used in Bulletin No. 1524 to illustrate special features of the Uniclosed design including armorclad asbestos-protected windings, drip-proof housing, Lubri-flush lubrication, normalized castings, cyclone ventilation, centricast rotor, and annealed laminations. These motors are available in a range of horsepower ratings from ¼ to 250.—U. S. ELECTRICAL MOTORS, INC., 200 E. SLAUSON AVE., LOS ANGELES 54, CALIF.

"Gunite" Construction — Advantages and applications of "Gunite" concrete are listed in 24-p. catalog. The bulletin is thoroughly illustrated with photographs showing the method of applying "Gunite", as well as listing several installations in which this method of concrete construction has been used. Uses for "Gunite" include lining, repairing, fireproofing, encasing, waterproofing, insulating, and original construction of concrete-faced structures.—GUNITE CONCRETE & CONSTRUCTION CO., 1301 WOODSWETHER ROAD, KANSAS CITY 6, MO.

Pipe-Tool Catalog — Hand and electric power tools for cutting and threading pipe, bolts, and conduit are listed in a 36-p. catalog. Photographs in Bulletin 49 illustrate each of the tools, and cross-sectional drawings indicate step-by-step procedures of the manner in which the tools function. Complete specifications are provided for each item in the line. The tools are coded to simplify ordering.—BEAVER PIPE TOOLS, INC., 349 DANA AVE., WARREN, OHIO.

Crushing, Screening Plant—Descriptive folder shows nine views and detailed flow diagram of the 17-V portable crushing and screening plant. Feature of this duplex plant is the exclusive bottom deck feed principle which makes the 17-V especially suitable for use on small construction jobs and for maintenance work. Folder contains complete specifications and dimensions of the 17-V plant. — PIONEER ENGINEERING WORKS, INC., 1515 CENTRAL AVE., MINNEAPOLIS 13, MINN.

Meters for Steam, Air, Gas—Two bulletins describe the construction and operation of Shuntflo meters, designed for measurement of steam, air, or gas flow where an accurate accounting is desired. Bulletin 400-F1 describes the Model SMKS for use in 1 to 12-in.-dia. lines; Bulletin 400-F2 describes the Model SMDH which is made with threaded or flanged ends for use with 1-in. lines, or with flanged ends for 1¼-in. lines. Both bulletins contain complete information on construction features, operational characteristics, and design data.—BUILDERS-PROVIDENCE, INC., 9 CODDING ST., PROVIDENCE 1, R. I.

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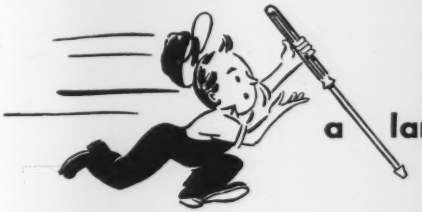

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READER COMMENT

Not All the Russians

Sir: May I correct your statement "Off His Chest" in July 21st, p. 17.

The Russian people are probably as nice as any people. My criticism is of the Russian Government, the Politburo, not the Russian people. Probably most Russians themselves would like to cut the throats of the Politburo if they had a chance.

L. F. HARZA
Consulting Engineer
Chicago, Ill.

Speed Ranges Suggested

Sir: I have read your good editorial on minimum speeds for parkways in ENR Aug. 18, p. 21.

While the need for a bottom speed for the cars using the righthand lane is being generally discussed, I, personally, happen not to have seen any recommendations as to what these speeds should be. While driving on many of the bigger parkways in a number of states, I came to the conclusion that the following speeds could properly be used for uniform and effective regulation:

Max. Mph.	Min. Mph.
55 and over	35 or 40
50	35
45	30
35	25

The one in doubt is the minimum speed when the maximum is 55 or over. While 35 may seem too slow, there is some doubt in my mind whether every driver on a road should ever be required to maintain a minimum of at least 40 mph. on sections of highway where considerably higher speeds are permitted.

It will also be seen that the minimum miles do not follow in arithmetical progression. That is partly for the above reason and partly because it did not seem desirable to have the lowest minimum less than 25 mph.

While 35 is low for a maximum, it still exists on many parkways in municipalities, although generally not maintained or enforced.

I fully agree with you that highway operation is seldom regarded as an engineering matter. I am glad to say that while the East River Drive was under design, I used my prerogative as a commissioner to invite the police commissioner to deputize permanently his top police (traffic) official to consider all phases of the engineering design from an operational point of view. For example, when we built a "service street" (local lane serving buildings not accessible from the main drive) the police decided, while the plans were being made, whether the street, of standard width, would be for two-way or one-way traffic and which direction it would flow. All of this advice helped a great deal in the operation.

WALTER D. BINGER
Vice-President
City Investing Co.
New York 4, N. Y.

More on Plastic Flow

Sir: Referring to Professor Boguslavsky's article (ENR May 5), it should be noted that plastic flow or time yield will be less in concrete reinforced for compression, since some of the original compressive stresses existing in the concrete will be shifted to the steel, thereby reducing the unit stresses in the concrete.

It would seem that if the compression steel is placed at or near the center of compressive values that this shift of stress would not very much change the load-carrying capacity of a beam, in that the lever arm between compression and tension centers would remain practically constant. It must not be the intention of ACI 706 (b) to allow unit stresses of 18,000 or 20,000 psi. in compression steel where designs are based on the usual flexural assumptions, as per Joint Committee Report, paragraph 802, since plastic flow would then greatly increase these stresses.

Take the beam under present discussion, for example: $b = 10$, $n = 10$, $d = 20$. To simplify matters, use tension steel $A_s = 3.25$ sq. in. and compression steel = 1.00 sq. in., located with its center 2 in. from the top of the beam.

If X is the distance from the neutral plane to top of the beam, then statical moments about the neutral axis with compression concrete transformed to an equivalent steel section are as follows:

$$\frac{x^2}{2} + 0.9(x - 2) = 3.25(20 - x)$$

$$x^2 + 8.3x = 133.6$$

$$x = 8.13 = kd$$

$$k = 0.4065$$

Averaging up compressive stresses, we get the compression center 5.55 in. above the neutral plane; $j = 5.55 + (20\text{-}8.13) = 17.42$, and the moment is $17.42 \times 3.25 \times 20{,}000 = 1{,}130{,}000$ in. lb.

If we use $n = 20$ and the other units as given—except that the compression stress in the steel will be 21,600 psi.—$kd = 10$ in. almost exactly, and the moment of resistance 1,100,000 in.-lb., which agrees closely with Professor Boguslavsky's conclusions.

VERNON H. SMITH
Consulting Engineer
Memphis 3, Tenn.

The Widest Bridge

Sir: D. B. Steinman's article, The World's Most Notable Bridges, (ENR Dec. 9, 1948) is interesting and informative, but it would be more complete and more satisfying if certain additional factors other than the length of span were emphasized—width for example.

The widest bridge I know of is the "Big Bridge" at Lockport, New York over the Erie Canal. Many people have crossed this bridge without knowing it was a bridge. I am one of them and I did not learn it was a bridge until this past winter, in a little town 1,800 miles from here. There, in talking of another famous bridge in Lockport, the second in the world to be floored with an open steel mesh grid, with a lady from that town, she told me of the "Big Bridge."

Returning, I checked the width of this bridge with E. W. Wendell, deputy chief engineer, New York State Department of Public Works, who said:

"We designed and built the bridge you speak of in Lockport. It is a 3-hinge, deck steel plate girder arch over the Barge Canal and over the Canal locks. It has a width on one end of 394.5 ft. and on the other end it has a width of 469.5 ft. It is only 123'-4" long."

WALTER E. IRVING, *President,*
Irvington Subway Grating Co., Inc.
Long Island City, N. Y.

Architects on Auditorium

In the news article (ENR Aug. 11, 1949, p. 21) announcing the selection of Ammann & Whitney, consulting engineers, New York, as the recipient of the first Concrete Reinforcing Steel Institute Award, two of their recent structures were mentioned. With respect to the Onondaga County War Memorial at Syracuse, N. Y., which was illustrated, it should have been stated that Edgarton & Edgarton were the architects.

Raymond

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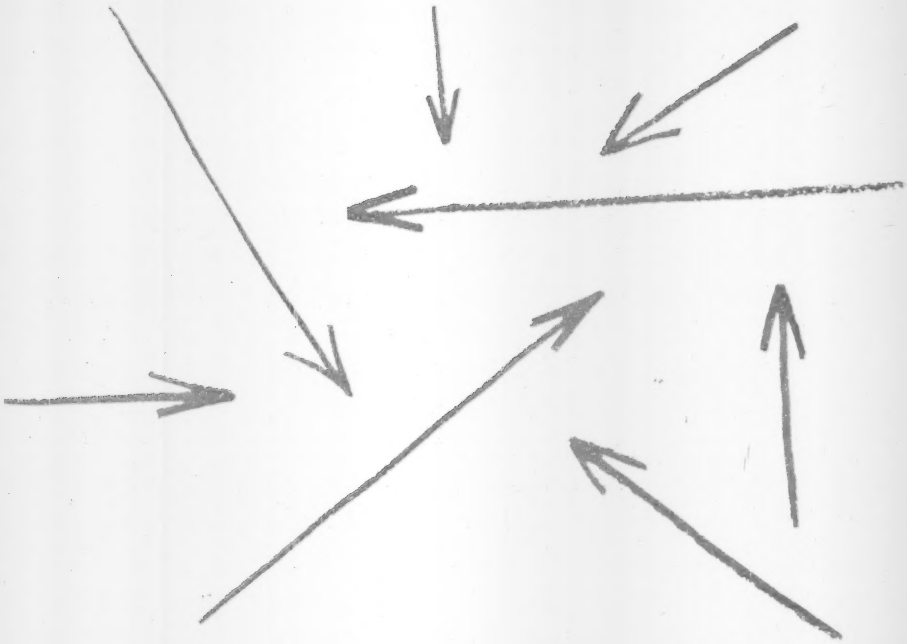

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And Timken tapered roller bearings give you these added advantages: Due to the line contact between rolls and races, they have extra load carrying capacity. True rolling motion and smooth surface finish practically eliminate friction. Timken bearings permit the use of closures which keep lubricant in—dirt out. And since they're made of Timken fine alloy steel, Timken roller bearings normally last the life of the machine in which they are used.

Dependable performance and public acceptance of Timken bearings have made Timken-bearing-equipped products first choice throughout industry. They add a valuable sales feature in your product—build greater acceptance among customers. When you specify bearings for your product, specify "Timken". And when buying new equipment, always look for the trade-mark "Timken" on the bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

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